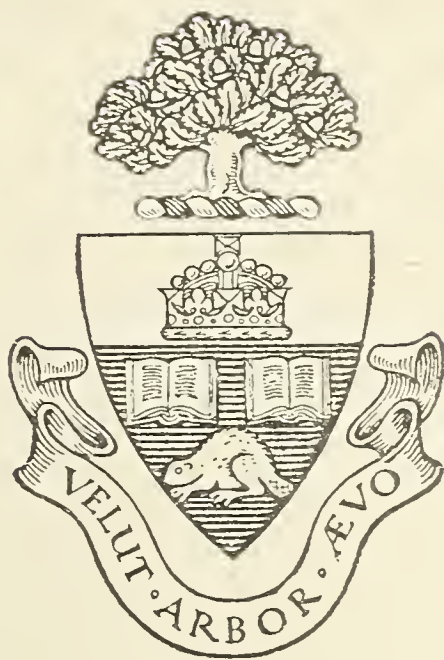


UNIVERSITY OF TORONTO



REPORT OF THE DEAN  
OF THE  
FACULTY OF MEDICINE

*Session 1946-1947*

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## *Report of the Dean of the Faculty of Medicine*

Two years have elapsed since the inauguration of the new course in medicine. The first group of students enrolled under the new arrangements have completed their two years in premedical studies and will begin their first year in the study of medicine in the autumn of 1947. There is every indication that the planning of the work in the two premedical years was of a sound nature. The students themselves are enthusiastic and the members of the Faculty of Arts who have conducted the courses report a most satisfactory standard of scholarship in both the sciences and the humanities.

There is however grave doubt of the wisdom of selecting from a large group of matriculants, chiefly on a scholarship basis, 150 students who, if they satisfy the examiners in the premedical subjects, proceed to the study of medicine. It would be more desirable to select these students after they have completed their premedical requisites, rather than at the immature age which they have attained on securing their honour matriculation. However there is reason to believe that the material so far selected is excellent. Last year 200 students were admitted, approximately 65 per cent being ex-service candidates. In the coming autumn the number of admissions will again be reduced to 150. It is felt that the problems of administration in any medical school with more than 150 in each year become so complicated and the number of teachers, particularly in the clinical years, so large, that it becomes impossible to maintain a reputation for sound teaching and research. If an enlarged output of doctors is desired the answer lies in an increase in the number of medical schools rather than in increasing admissions to a school of this size. But when one studies the report of a survey by the Department of National Health and Welfare in 1946 it is evident that Canada, even with the present scale of graduation of doctors, will be in a reasonably favourable position in 1952, judging by the population-physician ratio predicted for that year.

This year has been marked by the retirement of several senior departmental heads. Professor Duncan Graham, C.B.E., has retired from the direction of the Department of Medicine after twenty-eight years of the occupancy of that chair. At the time of his appointment he was the first full-time professor of medicine in the British Empire. During that period he has built up a strong teaching and research department. One of his own students, Dr. Ray Farquharson, M.B.E., will assume the responsibilities of the Sir John and Lady Eaton Professor of Medicine on July 1.

Professor W. E. Gallie, who has been a member of the teaching staff of the Faculty since 1908, Professor of Surgery since 1929, and Dean of the Faculty from 1936 to 1946, retires on July 1, and will be succeeded by Dr. Robert Janes. Dr. Gallie also has surrounded himself with a brilliant coterie of younger surgeons, building on the foundation so firmly laid by his predecessor, the late Dr. C. L. Starr. He has in these latter years been particularly interested in the development of graduate training in surgery, and undoubtedly will continue to devote much of his energy and talents to furthering the interests of specialist training throughout the province.

Professor Andrew Hunter, C.B.E., retires from the Chair of Pathological Chemistry and will be succeeded by Dr. James Dauphinee, O.B.E. Professor Hunter will devote his time to special problems of research in the laboratories of the Hospital for Sick Children. Dr. Dauphinee will continue his associations with the Department of Medicine and the medical wards of the Toronto General Hospital, thereby bringing to the clinical departments the advantage of closer association with the laboratory and research departments.

Professor C. B. Farrar retires from the Department of Psychiatry after many years of scholarly and wise direction. He is succeeded by Dr. A. B. Stokes from the Maudsley Hospital in London, England.



Professor Angus Campbell has retired from the Chair of Oto-Laryngology and is succeeded by Dr. Percy Ireland. Dr. Ireland is a graduate of this school with extensive training both here and in the United States. He enlisted in the Canadian Army in 1940 and served as adviser in Oto-Laryngology to Canadian Military Headquarters overseas.

During the year two refresher courses of four weeks each were offered to general practitioners. On each occasion approximately 20 students were enrolled. A longer revision course for specialists in surgery and internal medicine was given in the autumn of 1946 with a total of some 30 students in attendance for eight weeks. The Faculty also contributed largely to a special course on the treatment of fractures and dislocations in January, 1947, sponsored by the Workmen's Compensation Board. As special lecturer, Sir Reginald Watson-Jones of London, England, gave the major part of the instructional lectures. The course was attended by a large group of practitioners from the whole province and the new assembly room in Sunnybrook Hospital proved to be a most adequate meeting-place for the 600-odd students who were registered.

The Department of Oto-Laryngology has arranged a two-year graduate course for a limited number of students who wish to prepare themselves for specialist practice in that field. The Department of Ophthalmology reports splendid progress in its three-year graduate course in that specialty. The Hermant Fellowships are of particular value in assisting those who are proceeding to specialist qualifications. Plans for a specialist course in anaesthesia are under way and it is hoped that the first students will be enrolled next year. As well as giving the organized courses the members of the Faculty are in constant demand to contribute to the various programmes of medical associations and group meetings not only in this province but throughout Canada and the United States. With the increase in the length of the academic year from September 8 to June 5, there is a heavy load of teaching, both undergraduate and graduate, imposed upon the members of the clinical departments, the greater number of whom are part-time teachers on a modest honorarium.

During the year we have been fortunate in the fact that a number of international scholars and teachers visited the school. Professor Bernardo Houssay of Buenos Aires, the Charles Mickle Fellow for 1945, delivered a lecture to students and staff in Convocation Hall. Sir Reginald Watson-Jones found time in a busy week of lecturing to speak to the final-year students. Dr. Harrington of the Mayo Clinic gave the annual Balfour Lecture. Dr. John Ryle of Oxford, England, told us of the new experiment in social medicine there. Professor Besançon of Paris, France, spoke to the final-year students on certain problems in medicine related to the German occupation.

In the autumn of 1946 the American Diabetic Association celebrated the twenty-fifth anniversary of the discovery of insulin by a three-day session of lectures and discussions. On the opening day, the afternoon was devoted to lectures signaling the importance of the discovery of insulin and reviewing the history of those early days in the laboratories and in the wards of the Toronto General Hospital when insulin was undergoing its first laboratory and clinical tests. Dr. Seale Harris spoke on the life of Banting. In the evening of the same day the University was host to the members of the society and many distinguished visitors from abroad, Dr. Lawrence of England, Dr. Hagedorn from Denmark, Dr. Houssay of Buenos Aires, Dr. Joslin and many others from the United States. A full account of the proceedings is being published by the executive of the American Diabetic Association.

Professor Mendel of the Banting and Best Research Department exchanged with Professor Jansen of the University of Amsterdam for a period of three months. It was stimulating to have Dr. Jansen with us and Dr. Mendel reports that he was enthusiastically received in Amsterdam and thoroughly enjoyed his stay there.

Other visitors to various departments included Dr. W. J. Kolff and Dr. Formyne of Holland; Professor Lépine of the Pasteur Institute, Paris, France;



Professor Peters of Oxford; Sir Henry Dale of London; and Professor Joseph Charvát of Prague.

The Medical Alumni Association has continued to show a kindly interest in all matters related to medical education and their financial support in the way of an increased number of scholarships and bursaries has been much appreciated.

During the year new agreements have been negotiated between the University and St. Michael's and the Toronto Western Hospitals. Under these agreements all new appointments to both hospitals in all the departments will be made after consultation with and on the advice of the respective university departments. Each new appointment in a teaching department of the hospital will carry with it appropriate university rank. These two important centres now have full membership in the federation of teaching hospitals associated with the University.

The Faculty has established a general committee dealing with research; a sub-committee of this body, on which are represented any departments in the University which are interested in cancer, has under its review and guidance the whole field of cancer research. The recent announcement of the Foster Bequest will make possible the desirable continuity of effort in some of the departments prosecuting research in this field. Another large bequest by a graduate of our school has been announced this year. The late Dr. Chisholm of Prince Albert, Saskatchewan, has bequeathed a sum of approximately \$200,000 for work in the Faculty of Medicine. It is gratifying to know that the needs for support of increased training and research and the expansion of already overcrowded departments in the basic sciences, and many other needs of the school, are being recognized by those who find it possible to render financial aid.

The tremendous advances in medical knowledge in the past two decades have resulted in correspondingly increased obligations on the part of medical schools everywhere. Research must go hand in hand with teaching. Graduate training in the various specialties must frequently be directed for periods of five or more years. Space originally designed for laboratory work in the undergraduate years must be expanded for research and training at the graduate level. The medical school of today is no longer a school solely for the training of undergraduates, although that is its most important function. In order to maintain teaching at a high standard, all its teachers must be interested in the broad field of research and graduate training.

Details of researches and publication of books and papers which give some indication of the diversity and extent of the work in the various departments will be found in the reports which are submitted. These reports provide also additional information on various intradepartmental staff retirements and promotions.

During the last two years under the guidance of Dr. W. P. Warner, C.B.E., the Director-General of Treatment Services of the Department of Veterans Affairs, there has been an increasing degree of co-operation with the medical schools. In our own school the greater number of consultants and specialists in the departmental hospital here are recommended to their appointments by the medical faculty. Christie Street and Sunnybrook Hospitals have established organized training of interns and this system of training is integrated where possible with the various training programmes in the university teaching hospitals. It is believed that not only does such an arrangement augment the facilities for graduate training in this centre, but that it will provide, through university affiliation, for a continued maintenance of a high standard of treatment for the veterans.

There have been many signal honours and distinctions awarded to various members of the staff in the past year. Dr. Duncan Graham was admitted to the degree of LL.D. (*honoris causa*) by the University on the occasion of the convocation for medical students on June 27. His portrait was painted by Mrs. Lillias Newton and presented to him on the occasion of a dinner tendered by his colleagues in June, marking his retirement from the Sir John and Lady Eaton Chair of Medicine. Dr. W. E. Gallie was also the recipient of his portrait painted by Cleve Horn and presented



to him at a dinner in June. On that occasion he received three bound volumes containing the manuscripts of fifty-two original articles on surgical subjects written by his colleagues and former students. These will be available within a few months in the form of a book extensively illustrated and published by the University Press. Dr. Gallie was elected Vice-President of the American Surgical Association for 1947-8, and due to the death of the President, Dr. Elliot Cutler of Boston, will be the officer responsible for the activities of the Association for the ensuing year. He will also visit England in September to deliver a Moynihan Lecture at the Royal College of Surgeons. While there he will receive at the hands of the President of the College the Honorary Medal instituted in 1802, being the twentieth recipient of the medal since that date.

Professor G. E. Richards received the degree LL.D. (*honoris causa*) from Queen's University at a special convocation in March, 1947.

The degree of Doctor of Medicine (*honoris causa*) was conferred on Professor C. H. Best by the University of Amsterdam, as well as the degree of Doctor of Science (*honoris causa*) by the University of Cambridge. Dr. Best was made an Honorary Member of the Royal Academy of Sciences, Amsterdam, Foreign Correspondent of the Académie Royale de Médecine de Belgique, and Corresponding Fellow of the New York Academy of Medicine. The American Physicians Literary Guild awarded him first prize for the Banting Memorial Lecture.

Professor Best was elected 2nd Vice-President of the American Diabetes Association. He was appointed consultant to the National Institute of Health of the United States Public Health Service; member of the Research Defence Board, Department of National Defence, Canada; member of the Interim Committee, National Cancer Institute of Canada; co-editor of the *Journal of Vitamin Research*; and an editor of *Excerpta Medica* (Section III, Endocrinology), Amsterdam. He was also re-appointed a scientific director of the International Health Division of the Rockefeller Foundation.

Dr. W. R. Franks, Dr. C. H. Best and Dean MacFarlane were appointed Officers of the Legion of Merit, Government of the United States. Dr. Jacob Markowitz was created a Member of the Order of the British Empire. Dr. D. Y. Solandt was awarded the Medal of Freedom (Bronze Palm), Government of the United States. Dr. F. F. Tisdall and Dr. T. G. H. Drake were created Officers of the Order of the British Empire. Professor Andrew Hunter was created a Commander of the Order of the British Empire. Dr. J. F. McCreary was appointed an Officer in the Order of Orange Nassau with Crossed Swords for services to Dutch children while with SHAEF Headquarters. The Norwegian government awarded the Cross of Liberation to Professor W. E. Gallie and Professor C. H. Best, and King Haakon's Medal of Liberation to Dr. E. Stanley Ryerson.

Dr. A. B. Stokes, the newly appointed Professor of Psychiatry, was awarded the C.B.E. in the King's Birthday List for outstanding work in the rehabilitation of war casualties in His Majesty's Forces in England.

Dr. John Hamilton, a graduate of 1935, who took his graduate training in the laboratories of Dr. Boyd and afterwards served with the Canadian Field Research Unit in England and Italy, returned to an appointment on the staff in Pathology at McGill. He has recently been appointed Professor of Pathology at Queen's University.

Dr. R. A. Cleghorn, a member of the Department of Medicine before the war, who also served overseas with the Canadian Field Research Unit has been appointed to the staff of the Department of Psychiatry at McGill University.

Miss M. T. Wishart was appointed to the Education Committee of the Association of Medical Illustrators in September, 1946, and to the Max Broedel Memorial Committee of that Association in 1947.

Professor C. B. Farrar was appointed to honorary membership in the Sociedad Argentina de Sexologia, Biotipologia y Eugenesia, Buenos Aires.



Professor Alan Brown has been invited to give the Ingleby Lectures in Paediatrics at the Faculty of Medicine, University of Birmingham.

Professor P. E. Ireland was admitted to the American Otological Society and the American Otological, Rhinological and Laryngological Society. He is also on the editorial board of *The Laryngoscope* and *Excerpta Medica*. Dr. J. A. Sullivan has been admitted to the American Otological Society. Dr. H. W. McCart has been elected Vice-President of the Canadian Oto-Laryngological Society.

Dr. Eric A. Linell was elected President of the Ontario Association of Pathologists. Dr. Philip H. Greey is Chairman of the Committee for the Investigation of the Rh Factor. Professor William Boyd is a member of the Interim Committee of the National Cancer Institute of Canada.

Dr. N. B. Taylor was elected a member of the Canadian Authors Association. Dr. Donald T. Fraser was elected President of the American Epidemiological Society.

Dr. R. M. Janes was appointed Professor of Surgery and Surgeon-in-Chief of the Toronto General Hospital. Dr. H. W. Wookey was appointed Hunterian Lecturer, Royal College of Surgeons of England, and will address the College in September on cancer of the oesophagus. Dr. R. R. Graham was elected corresponding member of the Academy of Surgery of Mexico. Dr. R. I. Harris was elected President of the American Orthopaedic Association. Dr. J. L. McDonald was appointed Chief of Staff of the Wellesley Hospital. Dr. F. I. Lewis was elected to Fellowship in the American Surgical Association. Dr. A. W. Farmer was elected Trustee of the American Association of Plastic Surgeons. Dr. J. R. F. Mills was appointed Surgeon-in-Chief of the Wellesley Hospital. Dr. Jessie Gray was appointed Surgeon-in-Chief of the Women's College Hospital. Dr. Burns Plewes was appointed Surgeon-in-Chief of the Toronto East General and Orthopaedic Hospital.

Dr. Ian MacDonald was appointed Director of Medicine at Christie Street and Sunnybrook Hospitals on the retirement of Dr. Farquharson who will continue to act as adviser to the Director-General at Ottawa.

The Dean, at this the termination of his first year in a new post, wishes to record his thanks to all the members of the Faculty Council for their invaluable assistance and co-operation in the administration of the school. Returning after an absence of six years, it was only with the help and advice of his senior colleagues that he has been able to assume and make an effort to carry the constantly increasing responsibilities of the administration of a large medical undergraduate body and to deal with the steadily rising demands of research and graduate training. He, in association with those of his colleagues who returned from service abroad, realizes now more than ever before the tremendous load which his senior colleagues carried during the war years. They carried on with sadly depleted staffs, managing in spite of great difficulties to meet the needs of the armed forces by graduating increasing numbers of doctors. At the same time they provided the necessary facilities for the training of specialists for the services. Those of our staff who are retiring may well look back on a fine record of solid achievement, a record which covers a period in national history which includes two major wars and all the incidental problems of post-war difficulties and reorganization which inevitably result from such upheavals. These men carry with them the gratitude and admiration of those who continue their work.

J. A. MACFARLANE, *Dean*



### Medical Society

(September, 1946, to June, 1947)

<i>Honorary President</i> . . . . .	Dean MacFarlane
<i>Honorary Secretary-Treasurer</i> . . . . .	Dr. H. B. Van Wyck
<i>President</i> . . . . .	John McBirnie
<i>Vice-President</i> . . . . .	Peter Heywood
<i>Treasurer</i> . . . . .	A. W. Chisholm
<i>Secretary</i> . . . . .	A. H. Stevens

The Medical Society has completed its activities for 1946-7.

A new form of initiation—the “Freshman Smoker”—was introduced by Stuart Vandewater to replace the usual practice of “hazing.” Its aim is to introduce the freshmen informally to their future professors.

The annual Meds At-Home committee, chaired by Peter Heywood, presented a most enjoyable dance. The music was supplied by one of our own second-year students, Fred Evis, and his orchestra.

Daffydil Nite was again the outstanding success of the year with Hugh Cleland as chairman of the Daffydil Directorate. The show was presented for three evenings and over 200 students contributed to the final production.

The Medical Music Club was organized on a permanent basis by Jack Finlay and the Society anticipates strong student support for this organization.

A special committee was set up to study the constitution and the necessary amendments were passed by the members of the Society.

A permanent committee to establish closer staff-student relations was formed with Bob Salter as chairman. Procedure for bringing student suggestions regarding the curriculum to the attention of the Faculty Council was defined by this committee.

The Arts and Letters Club experienced difficulty in obtaining accommodation for its meetings. However the Club functioned throughout the year and presented several interesting programmes.

Six editions of the *Medical Journal* were published and joint meetings of the old and new editorial boards were held with a view to determining a definite policy for the next year.

A sincere expression of gratitude is due all the year presidents and heads of the various subsidiary organizations for their support in serving on the Medical Society executive in the past year.

JOHN MCBIRNIE

### Medical Athletic Association

(September, 1946, to June, 1947)

<i>Honorary President</i> . . . . .	Dr. H. A. Cates
<i>President</i> . . . . .	J. W. Hazlett
<i>Vice-President</i> . . . . .	W. M. Little
<i>Secretary-Treasurer</i> . . . . .	J. A. Smith
<i>Publicity Manager</i> . . . . .	D. B. Campbell
<i>IV Medical Representative</i> . . . . .	F. D. Wilson
<i>III Medical Representative</i> . . . . .	A. B. Antoni
<i>II Medical Representative</i> . . . . .	J. Marotta
<i>I Medical Representative</i> . . . . .	W. K. Rock
<i>II Premedical Representative</i> . . . . .	A. Varga
<i>I Premedical Representative</i> . . . . .	E. Thompson

In the early fall, the annual Meds track and field meet was held in Varsity Stadium with the year 4T9 and Ted Schofield of that year ending up year and individual champions respectively.



In November, the Senior Meds rugby team, after a very successful season, met the Arts men of Victoria in a hectic Mulock Cup final. Later in December the Meds I lacrosse team tussled with P. & H. E. in the big gym of Hart House for the Dafoe Cup. Both these encounters were chalked up as losses but Meds again showed as threatening adversaries in interfaculty competition.

The winter sports showed a few glad moments for the teams of Medicine but the majority were eliminated before the play-offs. A handful of staunch athletes managed to win the interfaculty boxing and squash championships.

Late in the spring, the Association held its annual Meds Spring Swing at Casa Loma. The Dean and Dr. Cates presented ten special awards and twenty-five medical M's. The Medical Athletic Stick was awarded to the author.

The Treasurer reports a budget of \$1,600, most of which amount was spent on equipment and teams. A new notice board was constructed this year and now graces the halls of the Medical Building with the red and black.

Some fifteen men entered intercollegiate competition and over three hundred Meds men were organized into thirty-two teams for participation in interfaculty competition. In spite of these turn-outs, Medicine fell behind the Arts colleges and Forestry in the T. A. Reed Trophy award. Ken Rock, winner of the Senior Inter-faculty track meet was awarded the Chancellor Cody Trophy.

Thus another school year of athletic competition was brought to a successful close with Meds men strengthened in mind and body, ready to tackle their annual examinations.

JOHN W. HAZLETT

*Medical Women's Undergraduate Association*  
(September, 1946, to June, 1947)

<i>Honorary President</i>	. . . . .	Dr. H. McKinnon
<i>President</i>	. . . . .	Patricia Armstrong
<i>Vice-President</i>	. . . . .	Billie Train
<i>Treasurer</i>	. . . . .	Barbara McKinnon
<i>Secretary</i>	. . . . .	Ruth Allison
<i>II Premedical Representative</i>	. . . . .	Joan Fletcher
<i>I Premedical Representative</i>	. . . . .	Anne Bartlett

The members of the executive (with the exception of the first premedical year representative) have held office during the spring term of 1946 and the academic year 1946-7. During this time they have been active in establishing closer inter-student and alumnae-student relationships, and in dealing with all matters pertaining to the welfare of undergraduate women.

One of the most notable features was the inauguration of the Initiation Banquet at which a formal initiation service established the first premedical year women as members of the Medical Women's Undergraduate Association. These same "freshies" were entertained on the day of their registration in the premedical course by the girls of the graduating year.

The annual Christmas party and graduation party were successful social evenings; at the former toy gifts were given to the children of the University Settlement. The M.W.U.A. assisted the Medical Society in their attempts towards an all-out Election Day by convening a post-election tea-dance.

The need for alterations and additions to the medical women's common rooms was brought to the attention of the authorities. Some of the requisites have already been provided and others are on the way. We wish to thank Dr. MacFarlane for his interest.

In conclusion, may I express my appreciation to the members of the executive for their keen interest and excellent co-operation throughout our months of working together.

PATRICIA ARMSTRONG

Medical Women's Athletic Association

(September, 1946, to June, 1947)

President . . . . .	Jean MacPherson
Vice-President . . . . .	Dorothy Ley
Secretary . . . . .	Lois Lloyd
Treasurer . . . . .	Joy MacKinnon

The year 1946-7 was a successful one for Meds athletics in fulfilling its task of bringing relaxation and friendly competition into the girls' lives. Our new president, Lois Lloyd, brought honour to Meds by tying for first place in the University Golf tournament, and by winning the Intercollegiate Diving championship.

Meds entered teams in baseball, basketball, volleyball, tennis, badminton, hockey and swimming. Although they did not win many awards, the girls entered all activities enthusiastically.

JEAN MACPHERSON

FELLOWSHIPS, SCHOLARSHIPS, MEDALS AND PRIZES

*Awarded at Convocation, June, 1947*

GRADUATE

The Arch Hutchison Fellowship . . . . .	M. W. Johnston, B.A., M.D.
The Frances Esther Hutchison Fellowship . . . . .	R. M. Taylor, B.A., M.D.
The Lister Prize in Surgery . . . . .	E. B. Tovee, M.D.
The Percy Hermant Fellowships in Ophthalmology . . . . .	J. L. Burns, B.A., M.D. W. P. Callahan, M.D. H. S. Hamilton, M.D. R. K. MacDonald, M.D.

FOURTH MEDICAL YEAR

The Cody Gold Medal . . . . .	J. H. Crookston
The Cody Silver Medal . . . . .	Miss C. L. R. Aszkanazy
The Cody Silver Medal . . . . .	N. Kalant
The Chappell Prize in Clinical Medicine . . . . .	J. H. Crookston
The Chappell Prize in Clinical Surgery . . . . .	J. W. Hazlett
The William John Hendry Memorial Prize in Obstetrics and Gynaecology . . . . .	J. H. Crookston
The Ontario Medical Association Prize in Preventive Medicine . . . . .	D. H. Stein
The Doctor Roy Simpson Scholarship in Paediatrics . . . . .	M. H. R. Spring
The David Dunlap Memorial Scholarship . . . . .	M. D. Charendoff

*Awarded at other periods*

The Faulkner Medal in Psychiatry . . . . .	J. M. Kenyon, M.D.
The Baptie Scholarship . . . . .	F. G. Pearson
The B'Nai B'Rith Scholarship . . . . .	A. Rapoport
The Medical Alumni Scholarship . . . . .	G. L. Ralph
The Samuel Godfrey Scholarship . . . . .	A. D. Hutchison
The Charles E. Frosst Scholarship . . . . .	J. H. Crookston
The Alec Garalick Scholarship . . . . .	Miss Sylvia Ramcharan
The Ronald Saddington Medal . . . . .	D. J. McCulloch
The David Dunlap Memorial Scholarship (third year) . . . . .	W. O. Geisler
The Posluns Brothers Scholarship . . . . .	C. Ezrin
The John Copp Bursary . . . . .	H. A. Smythe
The David Dunlap Memorial Scholarship (second year) . . . . .	R. M. Hines
The Percy Hermant Fellowships in Ophthalmology (1946) . . . . .	J. R. Gaby, M.D. A. W. Mahood, M.D.
The J. J. MacKenzie Fellowship in Pathology and Bacteriology . . . . .	W. T. W. Clarke, M.D.
The Alexander McPhedran Research Fellowship in Medicine . . . . .	W. F. Greenwood, M.D.



REGISTRATION OF STUDENTS IN THE FACULTY OF MEDICINE

SESSION 1947-1948	
First premedical year . . . . .	150
Second premedical year . . . . .	182
First medical year . . . . .	162
Second medical year . . . . .	162
Third medical year . . . . .	159
Fourth medical year . . . . .	130
Diploma in Industrial Hygiene . . . . .	1
Diploma in Public Health . . . . .	20
Diploma in Psychiatry . . . . .	6
Diploma in Radiology . . . . .	6
Bachelor of Science (Med.) . . . . .	9
Postgraduate . . . . .	12
Art as Applied to Medicine . . . . .	9
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	1,008
Advanced refresher course in medicine and surgery, September 2 to October 18, 1947 . . . . .	39

Anatomy

*Under the direction of Professor J. C. B. Grant*

In the report from this Department for the session 1945-6 it was recorded that the number of students studying Anatomy had been mounting gradually for a decade and that it had more than doubled itself during that period, rising from 422 to 872. It may be noted that during the past session, 1946-7, the tide was still in flood, the number having risen to 1,258. Of these 1,258 students of Anatomy, 311, or one-quarter, were undergraduate students in the Faculty of Medicine.

For instruction in Gross Anatomy these students fell into the following seventeen groups, each of which had a different objective and for each of which different and separate tuition was provided, as follows:

UNDERGRADUATE COURSES IN GROSS ANATOMY:

1. Medical, first year . . . . .	164
Physical Therapy, teachers' course . . . . .	4
Art as applied to Medicine . . . . .	4
2. Medical, second year . . . . .	147
3. Dental, first year . . . . .	213
4. Physical Therapy, first year . . . . .	48
5. Physical Therapy, second year . . . . .	54
6. Occupational Therapy, first year . . . . .	131
7. Occupational Therapy, second year . . . . .	110
8. Physical and Health Education, second year . . . . .	116
9. Physical and Health Education, third year . . . . .	51
10. Optometry . . . . .	96

GRADUATE COURSES IN GROSS ANATOMY:

11. M.S. course . . . . .	25
12. Ophthalmology . . . . .	12
13. Oto-Laryngology . . . . .	8
14. Dental specialties . . . . .	6
15. Demonstrators of Anatomy to dental students . . . . .	4
16. Demonstrators of Anatomy to medical students . . . . .	5
17. Graduate nurses . . . . .	29

In addition to Gross Anatomy, the Department is responsible for teaching Embryology and Neuro-Anatomy to medical students; and it provided four separate courses in Histology: (a) to medical students, (b) to dental students, (c) to students of the Physical and Health Education course, and (d) to 23 students of the course in Physiology and Biochemistry. Further, 8 occasional and special graduate students worked in the Department.

In so far as laboratory instruction in Gross Anatomy and in Histology goes, the Department was virtually running two undergraduate schools for medical students and two undergraduate schools for dental students, seeing the classes were so large that all work had to be repeated. In effect, this means that the laboratories were in use and were staffed for twice the ordinary length of time.

The ex-service men—for it was an ex-service men's year—worked well and with enthusiasm, but lacking leisure they had more to do in the year than they could accomplish; stated otherwise, they had to eat more than they could digest.

Mr. M. L. Bunker, who gave the lectures in Histology to the students of the School of Physical and Health Education, was of the greatest assistance, as was Miss Riddell in the teaching of students in the Faculty of Dentistry. Dr. C. G. Smith displayed sustained energy and efficiency in the reorganized course for dental students. This reorganization became necessary on account of the large numbers of students, lack of adequate accommodation, and lack of material.

Postgraduate instruction in Anatomy has been provided for several years for those working for the M.S. degree. This instruction has been given once a week at evening classes by Dr. Watt and Dr. Cates. From this, the initial stage in our postgraduate work, instruction has extended to independent courses for dental specialists (conducted by Dr. Watt), for ophthalmologists (by Dr. Cates), and for otolaryngologists (by Dr. Watters).

Nine demonstrators of Anatomy are ex-service men who are proceeding to higher degrees. They joined the staff for one session with the object of improving their knowledge of the subject by imparting it. They are to be regarded as postgraduate students, and, as such, they receive special instruction. The five who demonstrate to the medical students and the four who demonstrate to the dental students met independently twice a week for special tuition. They proved to be a highly satisfactory group of instructors.

The Department here expresses its deep gratitude to the Great Atlantic and Pacific Tea Company, Limited, for the present of a modern and very valuable x-ray unit.

## RESEARCH

*Under the direction of Professor A. W. Ham*

Dr. Margaret Armstrong, through generous grants from the Ontario Cancer Treatment and Research Foundation, has undertaken an extensive investigation into certain attributes of the malignant process. Mammary carcinomata from mice have been cultivated in the yolk sacs of fertile eggs so that their effects on the developing chick could be ascertained. One tumour has been grown in yolk sacs for over a year, and it has survived over fifty transfers. Certain effects of the tumours on the developing chicks have been found to become greatly enhanced after the tumour has been transferred many times in eggs. The findings in this work and their significance have been presented in a full report.

Dr. A. M. Bryans, with Dr. Armstrong, has studied the ability of yolk sac tumours to cause hypoglycaemia in chicks. He is correlating the findings in this respect with histological studies on the liver and pancreas of the developing chick.

Dr. R. Harris, working under a grant from the Banting Research Foundation, has studied the effects of growth hormone on the cartilage and bone of old animals. He is also studying, by means of metachromatic staining reactions, the effects of hyaluronidase on the chondroitin sulphuric acid of cartilage.

Dr. Harris collaborated with Dr. Ham in contributing a section on "Technique for Bone and Cartilage" to the third edition of McClung's *Microscopic Technique*.

Dr. S. Gordon and Dr. Ham completed their studies of the fate of cancellous bone transplants.



*Under the direction of Professor J. C. B. Grant*

Dr. W. J. Horsey, using injection, dissection and corrosion methods, has made a study of the duct system of the pancreas.

Dr. N. A. Watters, using similar methods, has investigated the arterial supply to the testis.

PUBLICATIONS

GRANT, J. C. B. "Anatomical nomenclature" (*Anatomical Record*, vol. 94, 1946, pp. 1-6).  
——— *An atlas of anatomy*, translated into Portuguese by Professor T. Rocha Lazo, Universidade do Brasil. Rio de Janeiro: Waissman Koogan, Ltd. 1946.

*Art as Applied to Medicine*

*Under the direction of Miss Maria T. Wishart*

The diploma course for medical artists is gradually clarifying itself and assuming a solidity which promises well. Good material is presenting itself for the course, the number of applicants steadily increasing with numerous inquiries from points outside Canada, such as the British West Indies, California, etc. This year the students numbered 5, all three years being represented.

Miss Marguerite Drummond and Miss Elizabeth Blackstock alternated between working at the Hospital for Sick Children and as assistant medical artists in the Department. Unfortunately this year Mrs. J. R. Ross (Eila Hopper) was not available for a half-time appointment as assistant artist and demonstrator in the Department, which meant the entire teaching was undertaken by the Head of the Department. The students are few in number, but the nature of the work necessitates individual instruction, which takes time. Until our students are trained and provide a source from which to draw, the Department continues to work under difficulties in the matter of staff.

The illustrative branch of the Department has been made use of this year by a greater number of faculty members than in any other year, by all hospitals staffed by the University and by numerous outside sources. The work presented for illustration has been well worth while in that it represented original problems, challenging to the artist's ability. The members asking for work were particularly generous with their time affording the staff every opportunity to grasp their problems by demonstration in both the operating and the autopsy rooms, and on the wards.

Further research into and development of plastics suitable to the illustration problems of the Department, i.e. in addition to the moulage work, was not possible this year.

Illustrations from the Department have been used during the past year at the following meetings: the Gallie Club, Rochester, N.Y.; surgical staff meeting, Toronto General Hospital; Vancouver Medical Summer School; American Association of Industrial Physicians and Surgeons, Buffalo, N.Y.; a faculty meeting, University of Toronto; lecture at the Mayo Clinic, Rochester, Minn.; the Modern Medicine Exhibit of Medical Illustration; Toronto General Hospital, School of Nursing; Postgraduate nurses at the University of Toronto; Canadian Medical Association, Winnipeg; Inter-Cities Medical Meeting, Toronto; Lectures to medical students at Queen's University and the University of Toronto.

Illustrations have been, or are about to be, published in the following journals: *Canadian Medical Association Journal*; *British Journal of Surgery*; *Journal of Bone and Joint Surgery*; *Annals of Surgery*; *Surgery, Gynecology and Obstetrics*; *Journal of Ophthalmology*. They will also appear in the Gallie volume of Surgery.

This year's activities bear out the assumption made in last year's report of the widening functions which are being undertaken by this Department.



As the only Canadian on the Board of Governors of the Association of Medical Illustrators, Miss Wishart attended the first annual meeting of the Association held at Jefferson Medical College, Philadelphia, Pa. from September 23-6, 1946. This Association, which is international in character, brings the widely scattered medical illustrators together, affording an opportunity for the exchange of ideas and thereby advancing and developing medical illustration and allied fields of visual education, such as plastics, motion picture animation, exhibits, visual aids, etc. In addition to being on the Membership and Finance Committees, Miss Wishart was elected to the Max Broedel Memorial and Education Committees. The latter, which is concerned with the training of the medical illustrator, represents one of the primary interests of the Association. To agree upon and to establish minimum standards and entrance requirements with a definite type of curriculum is their first problem.

Miss Wishart extended her trip to include a visit to the Department of Art as Applied to Medicine at Johns Hopkins Medical School, Baltimore, Md., and to the Department of Medical Illustration, Duke University School of Medicine, Durham, N.C. The latter is considered by medical illustrators to be the most highly developed department of its kind in any medical institution.

In November, 1946, Modern Medicine of Canada sponsored an exhibit of medical illustration in Toronto. This was the first opportunity of seeing in Canada a representative showing of the work of American and Canadian medical illustrators. Following this the C.B.C. featured the work being done by Canadian medical illustrators in their Trans-Canada "C.B.C. News Round-up" and also in their broadcast to Great Britain and the Caribbean. Besides the medical profession, the dental and nursing professions were keenly interested in the teaching possibilities of these illustrations.

Directly resulting from this interest, Miss Wishart was asked to talk in March to the Committee on Instruction, District No. 5 of the Nurses Association of Ontario, in May to the refresher course for nursing instructors offered by the School of Nursing, University of Toronto, and to postgraduate workers, on medical visual aids pertinent to their problems.

An opportunity of great interest was afforded the staff of the Department and the students of the course in Art as Applied to Medicine to see an unedited moving picture animation of Bile Duct Surgery, prepared and directed by Miss Jessie Phillips, medical illustrator of the American College of Surgeons. Undoubtedly the day is coming when producers will follow the lead of the American College of Surgeons and employ a trained medical illustrator to design and supervise animation of a technical medical nature. It is planned to incorporate training in this line in the third year of the diploma course offered to students of medical illustration.

## *Biochemistry*

*Under the direction of Professor H. Wasteneys*

In April Professor Leslie Young, after nine years of service in the Department, resigned to take up the newly established Readership in Biochemistry at the University of London. Professor Young was an inspiring director of war research for a very active group of workers in the Department. He is a recognized leader in research in the field of intermediary metabolism. His return to England is a great loss to the Department. Dr. Gordon C. Butler, who has been appointed to succeed Professor Young, obtained his Ph.D. in 1938 for work done in this Department. He has since held an 1851 Exhibition Science Research Scholarship and a Beit Memorial Fellowship. He was head of the Physiology section of the Chemical Warfare Laboratories in Ottawa during 1942-5 and has, since 1945, been engaged in research in the division of Atomic Energy of the National Research Council.



In October, 1946, we suffered the loss of Mr. J. W. Fletcher, who died after an illness of five months. He had served the Department faithfully for twenty-seven years. In March, 1947, we lost the services of Mr. M. Edson who resigned after ten years of service to accept a much more lucrative position in industry. He was an exceptionally skilled technician and it will be exceedingly difficult to find an equally competent successor.

The arrangements for teaching in the Department were the same as for the previous year with the exception that, in order to meet the exigencies created by a change in the medical time-table, the course in Biochemistry for medical students which is normally given in nine months, had to be given in little more than four months. The strain on the instructional facilities of the Department was less than the strain on the absorbent faculties of the students for whom this extra burden was imposed on an already full year's work. The students, however, accommodated themselves cheerfully to the additional task and there were less than the usual number of failures in medical Biochemistry in the spring examinations.

Three graduate students, S. D. Simpson, M. Berenbom and G. S. Stewart, acquired the Ph.D. and Mr. L. Manson the M.A., at the spring convocation.

The space available in the teaching laboratories was barely sufficient to accommodate the students. It will be insufficient for the numbers anticipated next term and even with most careful planning of space and time some undesirable crowding is inevitable.

The research laboratories of the Department next term will be overcrowded and the Department, on this account, has been forced, reluctantly, to refuse accommodation to a number of students who have applied for permission to carry on graduate research in Biochemistry.

The total number of students registered in the Department during the session was 571. This number was made up of 342 medical students, 14 students of the General Course, 36 in the Physiology and Biochemistry course, 6 in Biology, 2 in Chemistry, 1 in Biology and Physics, 1 B.Sc.Med., 1 Chemical Engineering, 3 occasional, 67 in Dentistry, 40 in Household Economics, 2 in Household Science, and 56 graduate students. Of the graduate students 22 were candidates for the Ph.D. degree, 16 for the M.A., 1 for the M.V.Sc., 1 for the M.S.A., and 16 were occasional students or graduate students not proceeding to a degree. Ten of these students were candidates for the M.A. and 9 for the Ph.D. in Biochemistry.

## RESEARCH

### *Under the direction of Professor A. M. Wynne*

Dr. G. S. Stewart completed the investigations in which he had been engaged for several years in collaboration with the Chemical Warfare Laboratories. He submitted an extensive report on his work to the Directorate of Chemical Warfare and Smoke, for restricted circulation among workers engaged in related investigations.

J. D. O'Reilly continued his investigation of the enzymatic degradation of glucosamine by preparations derived from brain and other tissues.

A. W. Jackson, in continuation of his studies of bacterial amylases, has, during the past year, been engaged principally in investigating methods of concentrating and purifying the amylase which is present in the extracellular medium of cultures of fermenting bacteria. Precipitation of the enzyme with lignin, followed by removal of the lignin with suitable solvents, permits the recovery of a large proportion of the enzyme in concentrated form. It is believed that the application of this procedure, in conjunction with other methods, will yield highly active preparations of the enzyme suitable for studies of its chemical nature and its mode of action.

Dr. H. B. Stewart's work, commenced last year, on the effects of lysine deficiency in experimental animals, has led to an investigation of methods for the



purification of cytochrome c, a protein which contains an unusually large proportion of lysine. Preparations of cytochrome c made according to the procedures of Keilin and Hartree have been fractionated by chromatographic methods, and the chemical, spectroscopic and catalytic properties of the three fractions have been investigated.

W. L. Holmes has undertaken a study of the effects, on the enzyme systems and on the metabolism of developing chick embryos, of the tumours which grow on the embryos after transplantation, into the yolk sacs of fertile eggs, of tumour tissue similarly grown and derived originally from mouse mammary tumours of the milk-factor type. This work is being conducted in collaboration with Professor A. W. Ham of the Department of Anatomy.

E. V. Evans has been engaged in a study of the comparative efficiency of utilization of vitamin A and the carotenes in the rat, in relation to rates of growth and to storage of the vitamin. It is proposed to carry out similar studies with other species such as poultry and swine, in collaboration with the Department of Animal Nutrition, Ontario Agricultural College.

*Under the direction of Professor L. Young*

Dr. S. D. Simpson carried out further work on the biochemistry of BAL (British Anti-Lewisite).

Dr. M. Berenbom completed his studies of the metabolism of 1- and 2-naphthol. In the course of this work he isolated the ethereal sulphates and glucuronides of both naphthols from the urine of rats dosed with the parent compounds. The isolation of the sulphates has not been achieved previously. For the separation of the glucuronides Mr. Berenbom developed a procedure which may well prove to be applicable to the isolation of a variety of glucuronides.

L. A. Manson continued his work on the metabolism of the carcinogenic agent, 2-naphthylamine, which is responsible for the production of bladder tumours among workers in the dye-stuffs industry. Mr. Manson has shown that this compound is converted in the rat to 2-amino-1-naphthol sulphate and to N-acetyl-6-hydroxy-2-naphthylamine. He also studied the fate of N-acetyl-2-naphthylamine in the rat and showed that this compound is also converted to the 6-hydroxy derivative.

Dr. J. C. Laidlaw has been using tracer isotope techniques to study the formation of ethereal sulphates in the organism. By isolating radioactive 2-amino-1-naphthol sulphate from the urine of rats to which 2-naphthylamine and sodium sulphate containing  $\text{Na}_2\text{S}_{35}\text{O}_4$  had been given, he established that administered sulphate can participate in ethereal sulphate formation. As a result of his use of radioactive tracer methods, Dr. Laidlaw has been able to throw light on other aspects of ethereal sulphate formation *in vivo* which have hitherto been obscure.

Mrs. E. R. Solkin has been engaged in a study of the formation and excretion of derivatives of glucuronic acid by the rat.

A. M. Moore is studying the inhibitory effects of benzimidazole on the growth of seed sprouts (flax). The growth has been measured by two methods: (a) the volume increase during sprouting, (b) the change in nucleic acid phosphorus of the seed. This procedure has possible significance as providing information concerning the metabolism of nucleic acid in the growth process.

*Under the direction of Professor B. F. Crocker*

G. F. Townsend, working on the nutritional requirements of the honey-bee, fractionated five different pollens into extra-granular water- and ether-soluble and intra-granular water- and ether-soluble material, and is at present carrying out feeding experiments with these pollen-fractions in the Department of Agriculture at the Ontario Agricultural College.

L. J. Koppel, working on the problem of the synthesis of enzymes by living cells, has been devising methods for standardizing suspension of *Micrococcus*



lysodeikticus on a cell count, total N and dry-weight basis and methods for preventing cell multiplication in this organism without inhibiting the ability of the cells to produce enzymes.

Miss H. M. McConkey has begun a study of urinary amino acid elimination in hyper- and hypo-endocrine states in relation to the altered plasma amino acid levels which occur in these states.

*Under the direction of Mrs. J. M. Fisher*

J. S. Barlow is studying the electrolyte pattern and permeability of growing cells. Available data indicate that the chemical composition of an organized tissue in growing animals differs from that of the adult. An intensive investigation of the sodium, potassium, chloride and water concentrations in tissues (muscle and liver) of growing chicks, and the permeability of tissue cells has been undertaken for two reasons: first, because any clarification of the processes underlying growth in cells must be of significance in cancer research; and secondly, because a study in the development of organized tissues may be expected to elucidate permeability phenomena of mature cells. During the past year suitable micro-chemical methods have been developed and some preliminary experiments using radioactive sodium have been carried out.

Dr. D. L. Wilson is investigating the permeability of leucocytes. Suspensions of leucocytes were obtained by aspiration of the peritoneal cavities of rabbits after intraperitoneal injections of saline. The investigation has shown that the internal concentration of chloride in leucocytes varies with the chloride concentration in the external medium over a limited range of values. At all times, however, a concentration gradient has been maintained across the cell wall.

Dr. J. M. Fisher, in collaboration with Professor K. C. Fisher and Miss A. Warren of the Department of Zoology, is studying the effect of calcium ions on membrane formation in fish eggs. They have shown during the past year that a definite mathematical relation exists between the concentration of calcium ions in the external medium and the hardness of fish egg membranes, such that the formation of a calcium proteinate complex is implied. These formulations are only valid if some calcium ions are given off from the eggs themselves. A tentative estimate of this quality has been made and some preliminary experiments on the permeability of the membrane during its formation have been carried out.

#### PUBLICATIONS

- ROSE, DYSON. "The occurrence of acetone as a product of aerobacillus polymyza fermentation" (*Canadian Journal of Research*, vol. 24F, 1946, pp. 320-6).  
SIMPSON, S. D. "Synthesis of di- and trithiols" (*Canadian Journal of Research*, vol. 25B, Jan., 1947, pp. 20-7).  
WYNNE, A. M. "Non-oxidative enzymes" (*Annual Review of Biochemistry*, vol. 15, 1946, pp. 35-74).

#### *Hygiene and Preventive Medicine*

*Under the direction of Professor D. T. Fraser*

The enrolment of physicians in the course for the diploma in Public Health for the session 1946-7 was 29. One student registered for the diploma in Industrial Hygiene; 1 student for the diploma in Dental Public Health and 2 students for the diploma in Veterinary Public Health. Eight students, 4 from India, proceeding to the Master of Applied Science degree, were given a special course in Microbiology. More than half of the students in the above courses have served in the armed forces. Four physicians were granted fellowships, 3 by the Rockefeller Foundation and 1 by the Connaught Medical Research Laboratories. Including the students of this year, the total number enrolled since 1911 is 437.



As in previous years, courses of instruction in Bacteriology, Immunology and Parasitology were given to the students in the course leading to the diploma in Public Health, diploma in Dental Public Health, diploma in Industrial Hygiene and diploma in Veterinary Public Health and also to suitably qualified graduate students.

This year, the first, second and third years in the Faculty of Medicine received instruction in the form of combined tutorial and lecture courses in preventive and social medicine, including hygiene and sanitation. A new course was given for the first time to the students of the fourth medical year. This course had to be repeated to each of the four groups, making a total of 360 teaching hours. The advantage of having the large class divided into relatively small groups has been very apparent and has been reflected in the effectiveness of the teaching. In many respects this new course corresponds to the field course formerly given in the spring and autumn. A number of new exercises and field visits have been introduced and the student afforded an opportunity, through home visits, of observing certain aspects of the social and economic factors concerned in preventive medicine and public health. It is a pleasure to acknowledge the full co-operation of the Department of Health for Ontario, the Department of Public Health, Toronto, the Toronto General Hospital Social Service Department, the University School of Nursing, the Department of Education, Toronto, and the Victorian Order of Nurses, without whose enthusiastic support the course could not have been offered.

Briefly stated, the purpose of these courses is to present to the student the problems and practices of preventive medicine. The chief emphasis in this presentation is laid upon the means by which the general practitioner may most effectively practise preventive medicine; the duties and obligations towards society imposed upon the physician by legislative enactments; the role he plays in, and the assistance he may derive from, organized public health.

Laboratory courses and lectures were given as usual to the students in the second year in Pharmacy, second- and third-year Household Science and Household Economics; third-year Physiology and Biochemistry, third-year Physical and Health Education and to students in the School of Nursing.

A comparison of the numbers of students receiving instruction in the Department shows that the numbers have more than doubled since 1945 when 483 students were enrolled; the total number for 1946-7 is 1,083. The enrolment for the session has been as follows:

Candidates for the diploma in Public Health . . . . .	29
Candidates for the diploma in Dental Public Health . . . . .	1
Candidates for the diploma in Veterinary Public Health . . . . .	2
Candidates for the diploma in Industrial Hygiene . . . . .	1
Students registered in the School of Graduate Studies . . . . .	13
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Faculty of Medicine.	
Fourth year . . . . .	130
Third year . . . . .	127
Second year . . . . .	154
First year . . . . .	163
Faculty of Arts.	
Household Economics, third and fourth years . . . . .	96
Physiology and Biochemistry . . . . .	25
Faculty of Household Science, second and third years . . . . .	5
School of Physical and Health Education, third year . . . . .	51
School of Nursing . . . . .	145
Ontario College of Pharmacy, second year . . . . .	141

#### RESEARCH

Dr. M. H. Brown, with A. J. Bishop, has continued his studies on the antigenicity of typhoid strains. The study of approximately six hundred diphtheria strains isolated across Canada has shown that representatives of *gravis*, *mitis* and *intermedius* strains are widely distributed in the Dominion.



Dr. Frieda Fraser has continued her laboratory and clinical studies on antibiotics. In collaboration with Dr. Lillian Lome, the effectiveness of penicillin in oil and wax in the treatment of gonorrhoea was assessed.

Dr. F. O. Wishart, with the co-operation of Dr. C. W. Carr of Cookstown, has continued the study of the antitoxin response in children given a secondary stimulus of diphtheria toxoid. Dr. Wishart is also conducting a similar study of the diphtheria and tetanus antitoxin response in medical students.

Dr. J. M. Parker was awarded the Hastings Memorial Fellowship for 1946-7. A survey was undertaken of the mental hygiene problems in a public school where every child was interviewed and each family visited. This work was carried out at the East York—Leaside Health Unit.

Mrs. Mary Podoski has been isolating strains of bacteria and moulds of antibiotic activity with a view to their possible usefulness. A search for specific streptococcal bacteriophages has been made by Miss M. Langley. G. Shaw is working on the subject of the growth of the tubercle bacillus and related problems.

Dr. Helen Plummer, in collaboration with Dr. C. Siebenmann, studied the bacteriostatic effect of certain sulpha drugs, including marfanil, and of penicillin on seventy strains of Clostridia, representing ten species. In collaboration with Dr. R. P. Parker, Dr. Siebenmann and Miss M. Chapman, Dr. Plummer studied the effect of toxin and spores of *Cl. histolyticum* on tumour tissue in mice.

In the sub-department of Parasitology, under Dr. A. M. Fallis, Dr. Ella Kuitunen has completed a survey of the incidence of trichinosis in the wild rat. The tropical rat flea, *Xenopsylla cheopis*, hitherto reported in Canada only in British Columbia, was found to be as common as the temperate zone rat flea. Dr. Kuitunen has made a distinct contribution to knowledge in her study of the morphology and life history of an aberrant type of parasitic copepod taken from red cod caught off the Pacific coast. She has compared her material with specimens taken in Norway and Martinique. Miss Z. Christie and Miss C. Wilkes are continuing their respective studies in malaria and development of tape worms under controlled environmental conditions.

#### PUBLICATIONS

- KUITUNEN-EKBAUM, E. and WEBSTER, D. "Trichinosis in wild rats in Toronto" (*Canadian Journal of Public Health*, vol. 38, 1947, pp. 76-8).
- WISHART, F. O. "A review of present day immunization, practice and procedures" (*Bulletin of the Academy of Medicine*, Toronto, July, 1946).
- WISHART, F. O. and MALCOMSON, M. E. "Studies of the serology of typhus fever." I. "Complement-fixing antigens of *Rickettsiae prowazeki* and their relationship to *Proteus* 0X19." II. "Complement-fixing antibody response to vaccination and to infection." III. "Weil-Felix test and complement fixation with *Proteus* 0X19 following typhus fever infection and vaccination" (*Canadian Journal of Public Health*, vol. 37, 1946, pp. 369-80, 411-21, 461-6).
- WISHART, F. O. and REID, M. R. "Diphtheria antitoxin response to recall doses" (*Canadian Journal of Public Health*, vol. 38, March, 1947, p. 3).

#### Medical Jurisprudence

*Under the direction of Dr. K. G. Gray and Professor W. L. Robinson*

By arrangement with Professor J. K. W. Ferguson of the Department of Pharmacy and Pharmacology, we had available two or three extra hours in which we were able to cover the subjects of poisoning pertaining more particularly to the field of Medical Jurisprudence. In all, this gave us some eighteen lecture periods.

We still feel handicapped by the lack of time to cover our subject properly. The entanglements of the medical and legal professions seem to be increasing and we feel very strongly that a more complete course should be given in this subject.

At present Dr. Kenneth Gray has devoted his lecture periods to the subject from the legal standpoint particularly, the contents of this section on Legal Medicine



being revised and enlarged during the academic year. This material has been incorporated into a volume entitled "Law and the Practice of Medicine" which will be published by the Ryerson Press in May, 1947, and which will be a tremendous help to the students next year. The contents of this book indicate the nature and extent of the lectures and include the following topics: sources of law; constitution of courts, legal terms and procedures; opinion evidence, the expert witness; the rule against hearsay evidence; doctor, nurse, hospital in actions of negligence; unauthorized operations; sterilization operations; unauthorized post-mortem examinations; professional secrecy, defamation, privileged communications; business relationships; certain statutes; establishment, control, maintenance of hospitals and sanatoria; licensing of professional organizations; mental illness; public health administration.

The medical aspects of the subject, namely, the pathology and the conduct of inquests, have been handled, as heretofore, by Professor W. L. Robinson and Dr. Smirle Lawson.

The students are intensely interested in these lectures and many of them come back in later years to express their appreciation of the value of the course to the general practitioner.

## Medicine

*Under the direction of Professor Duncan Graham*

The past year was the second in which clinical instruction was given in accordance with the curriculum laid down for the new medical course. The extension of the yearly course of instruction from thirty weeks to thirty-six weeks has made it possible to cover more adequately the subjects of instruction in the third year. The new arrangement in the time-table for the final year has permitted an extension of the course of instruction in Dermatology and Venereal Disease.

Meetings for the discussion of methods of physical examination and history-taking were held again this year. Fellows in Medicine completing their course of postgraduate training have attended these meetings, and three Fellows have assisted in teaching. The "Outline of History-Taking" published by the Department is being revised.

In association with the other clinical departments, a one-month refresher course for general practitioners was given in October last. In co-operation with the Departments of Physiology and Pathology, a two-month advanced refresher course was given in August and September for candidates taking the examination for Fellowship in Medicine of the Royal College of Physicians and Surgeons of Canada. Seventeen graduates in Medicine attended this advanced course in Medicine.

This year 2 graduate students completed their course of graduate training in Dermatology and Syphilology, and 3 others their course of training in Internal Medicine. One graduate student has been attached to the Department as a voluntary assistant in Neurology and Psychological Medicine. A number of graduates have visited the Department and attended ward rounds and undergraduate clinics.

The Department regrets to announce the retirement of two senior members of the staff holding the rank of Assistant Professor of Medicine, Dr. J. H. McPhedran and Dr. W. F. McPhedran, and the resignation of Dr. J. A. Dauphinee, Associate in Medicine.

For nearly forty years Dr. J. H. McPhedran has been a member of the Department on the teaching staff of St. Michael's Hospital. In 1945, he was appointed Physician-in-Chief to St. Michael's Hospital and Assistant Professor of Medicine in the University.

Dr. W. F. McPhedran has been a member of the Department for thirty-five years, serving on the teaching staff of the Toronto General Hospital. Since 1934 he has been Physician-in-Charge of the Medical Out-Patient Department, with supervision of the clinical instruction of final-year students attending the Medical Out-



Patient Department. In this capacity he has held the rank of Assistant Professor of Medicine.

To these two senior members of the staff the Department would express its thanks for the many years of valuable service they have rendered.

Dr. J. A. Dauphinee, who joined the staff of the Department in 1933 after a prolonged training in both Medicine and Biochemistry, has resigned to accept the appointment of Professor of Pathological Chemistry as successor to one of his former teachers, Professor Andrew Hunter. The Department of Medicine regrets the loss of Dr. Dauphinee but is pleased that he remains with the Faculty of Medicine.

The Head of the Department, who retires at the end of the present session, is pleased to report the appointment of Dr. R. F. Farquharson as his successor. As a member of the Department since 1928, Dr. Farquharson has proved himself to be an able clinician, teacher and investigator. In 1934, he was appointed an Assistant Professor of Medicine and Head of the Department of Therapeutics. In this latter capacity he has demonstrated his abilities as a director of research and as an administrator.

### RESEARCH

Dr. W. R. Campbell has improved the methods for the spectroscopic identification and estimation of sulphaemoglobin, haemoglobin and methaemoglobin in the blood of patients suffering from transfusion reaction, poisoning from sulphonamides and other coal tar derivatives, and some varieties of the anaemias.

With a view to increased precision in diagnosis, the physical signs of thyroid disease have been subjected to review with the development of some new conceptions, improvement in specificity of tests and new methods of examination. This study has led to the development of more precise methods of studying tremor and a method for its recording and comparison with subsequent records showing results of treatment. A preliminary report of his studies on tremors was presented by Dr. Campbell at a recent meeting of the Association of American Physicians.

During the past year Dr. Dauphinee has continued our studies on patients suffering from hepatic disease and jaundice. Particular interest has been taken in the dietary history of patients with chronic hepatitis and cirrhosis because of suggestive evidence obtained by other investigators who have been able to produce cirrhotic lesions in animals by dietary manipulations. In the human cases seen in our group, with the exception of two or three chronic alcoholic patients who had been living on inadequate diets, no evidence could be obtained that dietary deficiencies played any great part in the causation of chronic hepatitis and cirrhosis. On the basis of the results of a large number of experimental observations on animals and of the evidence produced by Patek and others in human cases, we have employed a high-calory high-protein diet in the treatment of cases of cirrhosis of the liver. The results so far have been encouraging but it is too early to draw any very definite conclusions.

Dr. W. E. Hall, Fellow in Medicine, has been making observations on the protein content of the blood in diabetics in the malnourished state and after they respond to treatment. He has also found some interesting variations in the proportion of blood proteins in relation to allergy and immunity.

Studies of the variations in the constitution of plasma proteins in various diseases are continuing, with important results from both the diagnostic and prognostic standpoints. Using the sodium sulphite method of Campbell and Hanna, they in association with Dauphinee have shown that a serum protein intermediate in properties between fibrinogen and euglobulin appears in the blood in certain diseases such as chronic nephritis. It was found that this globulin fraction of the serum was precipitated with 13½ per cent sodium sulphite. This test has become a valuable liver function test for the diagnosis of chronic hepatic disease.

The behaviour of the plasma proteins in chronic arthritis has been under study by Drs. A. A. Fletcher and R. B. Kerr. Dr. G. Kelly and Dr. W. E. Hall, Fellows



in Medicine, have estimated the fractions of the serum protein and of the plasma fibrinogen and correlated these values with the sedimentation rate of the erythrocytes. It has been found that there is a correlation between the clinical activity in rheumatoid arthritis and the level of plasma fibrinogen. In general, there is also a relationship between clinical activity, plasma fibrinogen levels and sedimentation rates. Fibrinogen appears to be the labile fraction and evidently closely reflects the activity of the rheumatoid process. Fractionation of the proteins of joint fluids is yielding interesting if as yet unexplainable results.

Under the immediate direction of Dr. W. Graham, and in association with Professor Boyd of the Department of Pathology, Dr. M. A. Ogryzlo has been studying the pathological changes in rheumatoid arthritis and other conditions. A study of muscle lesions occurring in rheumatoid arthritis and other diseases will be published shortly.

Through the courtesy of Professor McIlwraith of the Royal Ontario Museum of Archaeology, Dr. A. A. Fletcher made a study of the incidence of arthritis in the vertebrae of Huronic Indians of the seventeenth century. From this study it would appear that rheumatoid arthritis was uncommon but that there was a high incidence of osteoarthritis in adults.

Dr. D. P. Murnaghan, Fellow in Medicine, has continued with the blood volume studies formerly carried on by Dr. R. A. Cleghorn. Blood volume studies have been made on cases of heart disease with and without failure and on cases of coronary occlusion. Blood gas analysis and the testing of cardiac catheterization have been added to the investigating programme.

Dr. R. C. Smith has been making a study of the histopathological changes in various diseases of the skin, working under the direction of Professor W. L. Robinson of the Department of Pathology. Working under the direction of Professor P. H. Greey of the Department of Bacteriology, he has made a study of different media for the primary culture of fungi from skin lesions, and is investigating the incidence of *Monilia albicans* in the sputum of patients with pulmonary infections.

Under the immediate direction of Dr. G. Bates, a survey was carried on in the Venereal Clinic of the Toronto General Hospital by Miss E. Winfield, with a view to discovering the factors other than medical involved in the spread of venereal disease. This survey was supported by a grant from the Minister of Education.

Dr. Wightman has continued his studies on patients with steatorrhoea.

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- WALTERS, J. A. "The clinical study of neurotic disorders in the plant" (*Canadian Journal of Public Health*, vol. 38, March, 1947, pp. 118-23).
- WRONG, N. M. "Penicillin in pyoderma" (*Canadian Medical Association Journal*, vol. 55, 1946, pp. 244-8).
- WRONG, N. M. and MACKENZIE, D. J. "Some aspects of penicillin therapy in early syphilis" (*Journal of the Canadian Medical Services*, vol. 3, 1946, pp. 205-9).

## Obstetrics and Gynaecology

*Under the direction of Professor H. B. Van Wyck*

The retirement of Professor W. A. Scott, who had been Head of the Department for eleven years, took place at the end of June, 1946, and, as a recognition of his distinguished services to the University, of which he had been a member of the teaching staff since 1914, he was appointed Professor Emeritus. His colleagues and students regret the severance of an association which had lasted for so many years and his absence from the active work of the Department leaves a blank which only his genial personality and high abilities can fill.

The close of the year 1945-6 brought the retirement of Professor R. H. Wesley as Obstetrician- and Gynaecologist-in-Chief at the Toronto Western Hospital and as Assistant Professor of Obstetrics and Gynaecology in the University. Dr. Wesley, as Head of the Department at the Western Hospital, left an enviable record as teacher, demonstrator and clinician. He has been succeeded by Dr. L. T. A. Armstrong who has been appointed Obstetrician- and Gynaecologist-in-Chief by the Hospital, and Associate Professor of Obstetrics and Gynaecology at the University. We also note with regret the retirement of Dr. S. J. N. Magwood and Dr. Kent Manning who have given faithful and distinguished service for so many years to the Department in the Western Hospital and the University.

The following promotions have been announced during the past year: Dr. D. M. Low to Assistant Professor; Dr. D. Nelson Henderson, Dr. H. W. Johnston, Dr. J. C. Goodwin and Dr. D. E. Cannell to Associates; Dr. G. L. Watt, Dr. John Mann, Dr. J. R. McArthur, Dr. D. T. Purdy and Dr. Melville C. Watson to Senior Demonstrators.

The Department is glad to announce the appointment of Dr. T. C. Jewell as a Junior Demonstrator.

During the past year, the staff, comprising the groups from each of the three teaching hospitals, has been working in close co-operation. In this a good beginning was made at the very delightful testimonial dinner to Professor W. A. Scott on his retirement from the Headship of the Department. Full attendance of the staff at this function was both a tribute to the esteem in which Dr. Scott was held and a good omen for unity of the three hospital staffs.

Three joint staff meetings were held during the year, one at the Toronto General Hospital, addressed by Dr. G. E. Richards, Professor of Radiology, one at St. Michael's Hospital, addressed by Dr. F. J. O'Leary, and one at the Western Hospital addressed by Dr. L. T. A. Armstrong.

Three clinical pathological conferences were held by Dr. William Boyd on gynaecological subjects and were well attended by the staff and much appreciated.

A radical change was inaugurated at the beginning of the fall term of 1946, inasmuch as the time-tables of the Department of Obstetrics and Gynaecology and the Department of Paediatrics were combined in the fourth year so that each student, for the nine weeks' term, devoted all his time to these subjects. Four days each were



devoted to Gynaecology and Obstetrics and two days to Paediatrics. It was hoped that the two courses running concurrently would benefit by this closer association.

On Monday and Thursday afternoons a series of seminars was held at which each member of the fourth-year class read a thesis on some specific subject, related to either obstetrics or gynaecology, before the whole group of his fellow-students. These seminars were presided over by members of the staff. It is worthy of remark that these seminars were uniformly of a very high standard; and it is believed that an opportunity for formal presentation of a scientific paper such as these seminars provided, forms very valuable training for the students. It is also noteworthy that, because of the provision of the necessary equipment, a majority of the students were able to illustrate their theses by lantern slides. An effort was made to make the seminars as formal as the usual well-conducted session of a scientific society.

During the past academic year, one or more hours of teaching were carried out each week by the presentation of moving-pictures. Some of these were purchased by the Department, others were rented from the National Film Society of Canada, who were very co-operative in providing films at a nominal charge, and many useful films were loaned by Ingram and Bell, Limited. By these means it was possible to show a new programme each week. A perusal of the titles will indicate the nature and value of this addition to our teaching methods: Manoeuvres on the Ayres Manikin; Normal Delivery; Vaginal Hysterectomy; Total Abdominal Hysterectomy; Treatment of Face Presentation; Treatment of Breech Presentation; Manchester Operation; Delivery of Quadruplets; Laparotrachelotomy; Complete Laceration of the Perineum; Foetal Birth Injuries; Craniotomy; Low Caesarian; Standard Obstetrical Routine; The Forceps Operation and Episiotomy; Forceps Delivery and Appraisal of the Newborn. It is hoped by both purchase and loan to add to this list of subjects for moving-picture presentation as it is believed that the tendency to make an increasing use of visual aids in teaching should be followed.

Re-arrangement of the fourth-year time-table is being planned by which the fourth-year students will be rotated through the three teaching hospitals. This will enable the fourth-year students to see a larger variety of clinical material and to have the benefit of teaching in all three hospitals. The change is necessary, also, because of the large size of the groups in the fourth year. By sending these groups to all the three hospitals, the unit for bedside teaching will be markedly reduced. This change will require a modification of the third-year time-table and it is proposed to postpone the living-in period in the third year until the fourth year and thus enable each fourth-year student to live in hospital for three weeks during his last year.

Much new teaching equipment has been purchased during the past year such as projectors, manikins and dolls, kodacrome projectors, slides, etc.

#### RESEARCH

In November, 1946, the Head of the Department arranged with the Heads of the Departments of Paediatrics, Pathology and Bacteriology, and the Dean of the Faculty of Medicine to establish a joint committee for the investigation of the Rh factor in the Toronto area. Dr. P. Greey was appointed to act as Chairman and the objectives of the investigation were outlined as follows: to determine the incidence of iso-immunization in obstetrical patients; to evaluate methods for the treatment of infants with congenital haemolytic disease; to collect serological and other data that might throw light on the proper prenatal management of pregnant iso-immunized patients; to conduct serological studies on Rh antigens and antibodies; to provide supplies of specific Rh antisera.

The representatives from the Department of Obstetrics and Gynaecology on this committee are Dr. D. M. Low, Dr. L. T. A. Armstrong and Dr. F. P. McInnis and there have been five meetings held during the year. At first the survey included only public ward patients in the Toronto General, Western and St. Michael's Hospitals. By April, 1947, it had been enlarged to include six more hospitals, namely



Toronto East General, St. Joseph's, Women's College, Wellesley, Mount Sinai and the Hospital for Sick Children. By May 1, approximately 2,000 tests had been done and it was found that the incidence of iso-immunization thus far encountered represents 1 per cent of obstetrical patients. Beginning May 18, arrangements were completed for a complete prenatal blood examination for all private obstetrical patients in the hospitals taking part in this survey. Besides a routine estimation of Rh factor, this examination includes haemoglobin estimation, blood grouping, and serological tests for syphilis. It is felt that this service will be of value and may occasionally save lives. And this city-wide plan, as it embraces the whole community, marks an important step forward in preventive medicine.

Several clinical research problems have been instituted under the supervision of Dr. J. Mann. Primary among the problems being investigated is the treatment of anuric and uraemic patients. During the first six months of this year, investigations have been carried on by Dr. J. K. W. Ferguson, Professor of Pharmacology, Dr. J. Mann, representing the Department of Obstetrics and Gynaecology, and Dr. J. W. Rogers, working in the Department of Pharmacology. Certain aspects of peritoneal perfusion treatment were investigated by these workers in an endeavour to obtain methods which would be less hazardous and less difficult than those previously employed. This work has led to the study of intestinal perfusion rather than peritoneal as a method of choice. Dr. Rogers and Dr. Sellers of the Department of Pharmacology have considerable experimental work to establish the value and practicability of this method and this is being prepared for presentation. The results obtained thus far have been extremely encouraging. Detailed laboratory and clinical investigation of the problem is being organized and further reports will be forthcoming in the future. In addition, several long-term problems are being planned by Dr. Mann and Dr. Rogers which will be studied in the hospital wards and clinics and which concern primarily certain aspects of the toxæmias of pregnancy.

During the latter part of the past year, work in the pathological laboratory of the Department has been resumed under the direction of Dr. D. N. Henderson. This work was interrupted during the war due to the resignation of our laboratory technician, who has now been replaced. At the present time, the value of vaginal smear examination as an aid to early diagnosis of carcinoma of cervix and uterus is being studied. The advantage of vaginal smear examination in the study of many gynaecological endocrine disorders is well established. It is now possible for this examination to be made a routine part of the clinical investigation carried out in the endocrine clinic.

Next year, in co-operation with the Department of Radiology, it is planned to study vaginal smears taken in cases of carcinoma of the cervix during the period of treatment and afterwards. The purpose of this is to determine if any changes can be observed in the cellular content of the vaginal smear upon which efficiency of the treatment might be assessed and prognosis determined. During the coming year, it is also hoped that the reclassification and study of ovarian tumours, begun before the war, will be resumed and a combined clinical and pathological review of these tumours will then be possible.

The co-operation of the Department of Pathology has made it possible to train our new technician and also to complete the pathological investigation of a series of unusual uterine tumours arising in the endometrium. The results of this study were reported during the year.

The treatment and investigation of uterine, vulvar and ovarian cancer has been continued by Dr. W. G. Cosbie and Dr. J. McArthur who represent the Department in the radiological service under the direction of Dr. Richards. The efficiency and extent of the service rendered are due to the excellent organization that has been built up by Dr. Richards in co-operation with those who represent the clinical department.



The clinics, attended by Dr. Cosbie and Dr. McArthur in conjunction with the staff in radiotherapy at the Institute of Radiotherapy, continue to show a great increase in the number of patients under treatment and observation. These clinics are not only the basis of an extensive clinical observation of all types of gynaecological malignant disease, but they provide the source of material for the detailed teaching of students. This year, Dr. Geraldine Maloney is undertaking, by means of the Papanicalaou technique, to observe the progress of patients suffering from cancer of the cervix while under treatment and during the immediate post-treatment period. It is hoped that this will be of value in helping to show at an early time those patients who may not respond favourably to radiotherapy, and, also, that it may prove to be a method of differentiating between the patients who are suffering from unresolved malignant disease, and the others who are showing the effects of the treatment they have undergone. Eighteen years have now been completed by the joint clinic in radiology and gynaecology under the direction of Dr. Richards, and it is felt that the value of this close co-operation is evident in the results which have been obtained.

A co-operative plan has been established with the Department of Public Health Nutrition under the direction of Professor E. W. McHenry, and, represented by Dr. G. L. Watt, this Department hopes to take part in an investigation of problems that concern diet in pregnancy.

An investigation of the value of sympathetic nerve trunk anaesthesia in the first stage of labour is being carried out under the clinical supervision of Dr. D. M. Low with the assistance of Dr. R. Gordon of the Department of Therapeutics, and Dr. R. MacKenzie of the Department of Anatomy.

Dr. J. R. McArthur is planning an investigation of the anaemia problem in pregnancy which it is hoped will be actively pursued with the co-operation of the Department of Medicine.

The endocrine outdoor clinic is being supervised by Dr. M. C. Watson, and plans are projected for the investigation of problems in this field and the search for clinical and laboratory standards for the evaluation of endocrine disturbances of the female reproductive function.

A general refresher course, in association with other clinical departments, was held in October and November and was designed to meet the needs of those who could take but a short time away from general practice. In conjunction with the other departments, an advanced refresher course is being planned in Obstetrics and Gynaecology, in September, 1947, for candidates who wish concentrated instruction preparatory to going up for examination either for Fellowship in the Royal College of Physicians and Surgeons or for certification as specialists in Obstetrics and Gynaecology.

Dr. Geraldine Maloney instigated and organized a study group among the senior interns in Obstetrics and Gynaecology of the three teaching hospitals. These meetings were held each month, were well attended, and many important problems were discussed by the members. The establishment of this inter-hospital senior intern discussion group has been a valuable innovation and it is hoped will be continued.

One of the most important functions of the Department is the providing of facilities for the training of students who wish to qualify as specialists in Obstetrics and Gynaecology. The course that is at present available in this Department comprises two years' training as senior intern, one year as Resident, and one year as Fellow. The posts available are naturally limited, but application may be made to the Dean or the Head of the Department.

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———"The early recognition of uterine cancer" (*Canadian Medical Association Journal*, vol. 55, 1946, pp. 237-40).



- GOODWIN, J. C. "The problems of the natural and artificial menopause" (*University of Toronto Medical Journal*, vol. 24, no. 3, Dec., 1946).
- HENDERSON, D. N. "Endolymphatic stromal myosis" (*American Journal of Obstetrics and Gynecology*, vol. 52, no. 6, Dec., 1946, pp. 1000-13).
- "The obstetric management of pregnancy complicated by heart disease" (*American Journal of Obstetrics and Gynecology*, vol. 53, no. 3, March, 1947).
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- SCOTT, W. A. and VAN WYCK, H. B. *Essentials of obstetrics and gynaecology*. Philadelphia: Lea and Febiger. 1946.
- WATSON, M. C. "Functional uterine bleeding" (*Canadian Medical Association Journal*, vol. 54, 1946, pp. 342-4).
- "Treatment based on diagnosis during the menopause" (*Canadian Medical Association Journal*, vol. 56, no. 6, June, 1947, pp. 620-4).

## Ophthalmology

*Under the direction of Professor A. J. Elliot*

The Department of Ophthalmology extended the postgraduate training during the session 1946-7 to a three-year period. The first year the student spends as a Hermant Fellow in one of the basic sciences of Ophthalmology, the final two years being spent as an intern in one of the University teaching hospitals. Four to six hours of didactic lectures were presented weekly to the interns by members of the teaching staff from October to May. On Saturday mornings ward rounds were made at the Toronto General Hospital and were attended by the interns. The following courses were given: Geometric and Physiological Optics, Physiology of the Eye, Embryology and Developmental Anomalies of the Eye, Anatomy of the Orbit, Skull and Brain, Pathology of the Eye, Bacteriology and External Diseases of the Eye, Principles and Practice of Biomicroscopy, Perimetry, Ocular Therapeutics, Medical Ophthalmology, Ocular Motor Anomalies, Radiological Ophthalmology, Industrial Ophthalmology, Refraction, Pathology of Visual Pathways. Senior interns were given instruction in the preparation of scientific papers and their presentation and each presented a paper at the Academy of Medicine, section of Ophthalmology.

The time allocated for undergraduate teaching in Ophthalmology was increased to approximately 43 hours of which  $13\frac{1}{2}$  hours were in the third year and the remainder in the fourth undergraduate year. Emphasis was laid in the lectures and clinics on the ocular manifestations of systemic disease. Dr. R. G. C. Kelly, Head of the Eye Department, St. Michael's Hospital, was appointed to the University teaching staff during the past year. Dr. J. C. McCulloch was appointed Head of the Eye Department at the Toronto Western Hospital. It is hoped that next year undergraduate teaching clinics in Ophthalmology will be given at both these hospitals in addition to using the present facilities of the Toronto General Hospital and the Hospital for Sick Children.

## RESEARCH

Basic research in the Department of Ophthalmology was carried out by the Hermant Fellows, Dr. A. W. Mahood and Dr. J. R. Gaby. The former studied the Schwartzmann phenomenon in rabbits and also the relationship of visual acuity and visual fields for colour on a perimeter. Dr. J. R. Gaby undertook an investigation of the colour, yellow, with a dichroic anomaloscope and also the study of the degeneration of the nerve fibres in the optic nerve of the rat. Dr. J. C. McCulloch studied a family having a large number of cases of choroideremia. Dr. H. M. Macrae in conjunction with Dr. O. B. Richardson has conducted a clinical investigation of the therapeutic properties of a new synthetic miotic, Di-isopropyl-fluorophosphate. Dr. J. S. Crawford has made a surgical study of the newer forms of implant into Tenon's capsule following enucleation of the eyeball.



## PUBLICATIONS

- CRAWFORD, J. S. "Relationship between visual acuity and refractive error in myopia" (*American Journal of Ophthalmology*, vol. 28, 1945, p. 1220).
- ELLIOT, A. J. "Ophthalmic indications of systemic disease" (*Manitoba Medical Review*, vol. 26, 1946, p. 612).
- "The role of the general practitioner in the diagnosis of glaucoma" (*Canadian Medical Association Journal*, vol. 55, 1946, p. 363).
- MCCULLOCH, J. C. "Clinical aspects of stereopsis" (*Archives of Ophthalmology*, vol. 36, 1946, p. 171).
- MORGAN, A. L. "Myopia" (*Canadian Medical Association Journal*, vol. 56, 1947, p. 406).

## Oto-Laryngology

*Under the direction of Professor P. E. Ireland*

The resignation of Professor A. A. Campbell during the early term was regretted by all his associates. Dr. P. E. Ireland was appointed Acting Professor in September to continue the session. The process of reorganization of teaching and staff has proceeded throughout the remainder of the term.

The time available for undergraduate clinical and lecture classes has been lengthened and an attempt made to make these as practical as possible. Toronto Western Hospital has been added as a teaching centre with Dr. D. B. French as the newly appointed chief of service being added to the University staff. Dr. French was recently Consultant in Oto-Laryngology to the Royal Canadian Navy.

Further staff changes in all the hospitals will be necessary in the coming year due to retirement and the staff deficiencies during the war years. Major A. M. McLeod has returned to the Department from the armed services. Brigadier C. A. Rae has been acting as adviser in Oto-Laryngology to D.V.A., but has returned also to his teaching appointment. The resignation of Dr. Gregor McGregor, who has been on leave of absence due to illness, is much regretted after his many years of faithful service.

Postgraduate teaching has been started for the first time in this Department. A two-year postgraduate course has had the first year completed. This is to consist of a clinical service rotating through all the teaching hospitals as a junior and a senior resident. A prescribed didactic course of lectures and demonstrations is given by members of our own staff and other University departments. It will enable the giving of about 350 hours each year in addition to staff meetings and ward rounds. It is hoped that before 1948 additional funds will be available so that a further year can be added as a preliminary research scholarship in the specialty. The approval of the Faculty Council for the establishment of this course has been obtained.

## RESEARCH

The Department, represented by Dr. J. A. Sullivan, in co-operation with the Department of Physics, has conducted an audiometric research problem. This was a continuation of the work previously conducted for the R.C.A.F. and was possible through a special gift of funds by Mr. W. H. Wright. It consisted of the study of complex tones and also of various bone conduction methods. A great deal of experimentation was done on the development of accurate research apparatus. This apparatus is well on the way to completion. The services of C. C. Gotlieb and W. E. Hodges of the Department of Physics have been invaluable in the technical details of this work. Dr. Sullivan has been in charge of the clinical part of it.

Dr. A. W. Ham, Professor of Histology in the Department of Anatomy, has been carrying out a series of experiments in bone regeneration in conjunction with Dr. J. A. Sullivan of our Department. The regenerative aspects of the three distinct layers of the labyrinthine capsule are being clarified. Histological sections are being prepared and a report on this work will be published at a later date.



At the Hospital for Sick Children three problems are proceeding under the direction of Dr. D. E. S. Wishart. They are as follows: (1) research into improved methods of bronchography in cases of bronchiectasis in children; (2) the effect of radium on the nasopharyngeal tissues in children; (3) the improvement of hearing in children by the various methods of treatment of the nasopharyngeal tissues.

A report of progress on the first problem was made by Dr. Wishart at the American Laryngological Society meeting, St. Louis, April, 1947.

#### PUBLICATIONS

- FEE, G. A. "The use and limitations of hearing aids" (*Canadian Medical Association Journal*, vol. 56, 1947, pp. 366-71).
- IRELAND, P. E. "Traumatic perforations of tympanic membrane due to blast injury" (*Canadian Medical Association Journal*, vol. 54, 1946, pp. 256-8).
- MCCART, H. W. "Surgical treatment of cancer of the larynx" (*Canadian Medical Association Journal*, vol. 55, 1946, pp. 365-8).
- SULLIVAN, J. A. "Otological research in the R.C.A.F." (*Canadian Medical Association Journal*, vol. 54, 1946, p. 22).
- "A statistical analysis of audiometric surveys in the R.C.A.F." (*Annals of Otology, Rhinology and Laryngology*, vol. 55, 1946, p. 839).
- WISHART, D. E. S. "Practical methods of testing hearing" (*Canadian Medical Association Journal*, vol. 55, 1946, pp. 567-71).
- "Rhinology in children." Annual review (*Laryngoscope*, vol. 57, 1946, p. 456).
- WISHART, D. E. S. and MORGAN, E. A. "Laryngo-tracheo-bronchitis" (*Canadian Medical Association Journal*, vol. 56, 1947, pp. 8-15).

#### Paediatrics

*Under the direction of Professor Alan Brown*

We feel that the new time-table for teaching in Obstetrics and Paediatrics has been a decided advance. As a result the students are able to concentrate on Paediatrics for two whole days each week during nine weeks. This enables them to keep in close touch with the clinical cases on the wards which was not possible with the previous time-table arrangement.

The plan of placing four senior and seven junior physicians on a full-time basis in the Hospital for Sick Children, as approved by the Board of Trustees, has been eminently successful so far. We feel that it is going to be a great advantage not only to the students but also to the patients in the Hospital.

#### RESEARCH

A survey of the present status of 123 patients who developed diabetes mellitus in childhood, fifteen to twenty years ago, has been undertaken. Of these cases, approximately 50 per cent are still living but show a very high incidence of degenerative disease, increasing with the duration of illness.

Studies on the blood and extracellular fluid volumes of nephritic children with oedema have been made with a view to assessing various methods of treatment.

Methods for administering oxygen to patients have been investigated. It was found that the use of the small box-type gravity feed oxygen tent was the best method for maintaining adequate oxygen concentrations (50 to 60 per cent) at low rates of flow. With the aid of the Hospital engineer, various types of oxygen tents have been constructed and tested. A simple method of oxygen analysis has been adopted for use on the wards and all patients receiving oxygen therapy now have the oxygen concentration they are receiving tested every four hours. This has resulted in more adequate treatment with less wastage of oxygen.

A study has been concluded on the incidence of rheumatic heart disease in Canada. Data were collected over several years from a variety of sources. Rheumatic heart disease was shown to be the second leading cause of death from disease in the ten to thirty-nine years age group.



Investigations were carried out on children with congenital heart disease by catheterization of the heart, and study of the blood gases. These procedures have been found to aid considerably in the diagnosis of the numerous anomalies. Studies with diodrast, injected rapidly, have also proven valuable in diagnosis.

An investigation is proceeding on the use of penicillin by mouth as a means of preventing upper respiratory infections and rheumatic recurrences.

A micro photoelectric fluorometer has been constructed. This instrument can measure the fluorescence from as little as 1/10,000 of a milligram of riboflavin in 1/2 c.c. of solution. A method for the determination of riboflavin in blood collected from a finger-prick has been developed and is being applied in clinical studies. Two alternative micro-methods for the determination of serum albumin and globulin have been evolved. Only 0.015 c.c. of serum is required for a determination. One method uses a salt fractionation procedure and the other an alcohol fractionation. Comparisons have been made between the two methods.

Comparison of liver stores of vitamin A in rats after feeding vitamin A, carotene dissolved in oil and carotene in cooked carrots has been completed. Vitamin A was found to be somewhat more than 2.5 times as effective as carotene for a source of vitamin A for rats. Approximately 75 per cent of the carotene was absorbed from the intestine when fed in oil solution and approximately 65 per cent when fed as cooked carrots.

The absorption of vitamin A in the alcohol and ester forms is being studied in the premature and full-term infant and in patients suffering from burns.

The study of patients with coeliac disease has been continued in co-operation with the Department of Biology and the Faculty of Dentistry, as has also the investigation of artificially produced coeliac disease in the rat.

A detailed study has been made of all cases of atopic eczema admitted to the Hospital during a two-year period. A special ointment has been evolved which has proved suitable for local application in atopic eczema. The anti-allergic effect of varying amounts of ascorbic acid in the guinea-pig is being studied.

Investigations are continuing on the epidemiology, prophylaxis and therapy of meningitis, whooping cough and tetanus. Clinical reports covering twenty-five year periods of observations in these diseases have been published.

The effect of the administration of thiamine to a group of school children has been observed. Two milligrams of thiamine given daily by mouth to half of thirty-six pairs of proved identical twins resulted in somewhat better growth and improved manual dexterity and prolonged memory. No improvement was noted in intelligence, immediate memory, code learning or school achievements.

Studies of digestive enzymes in normal infants and in those suffering from digestive disease have been continued. No constant trend appears in amounts of enzymes except in infants suffering from fibrosis of the pancreas.

Observations on the utilization of protein by infants with acute infections and fever as well as in normal infants have also been instituted.

Studies have been made on the various methods of resuscitation of infants suffering from asphyxia due to aspiration either at birth or subsequently. It is becoming evident that facilities for the removal of aspirated material should be available immediately following such an episode.

The results of treatment of severe dehydration following diarrhoea have not been completely successful in the past. The effect of treatment with potassium chloride solution (Darrow's solution) has been studied and the results considered quite promising.

#### PUBLICATIONS

JACKSON, S. H., DRAKE, T. G. H., SLINGER, S. H., EVANS, E. V. and POCKOCK, R. "The influence of riboflavin consumption in hen's eggs" (*Journal of Nutrition*, vol. 32, Nov., 1946, pp. 567-82).



- JOHNSTONE, W. M., DRAKE, T. G. H., TISDALL, F. F. and HARVIE, F. H. "A study of the ascorbic acid metabolism of healthy young Canadians" (*Canadian Medical Association Journal*, vol. 55, Dec., 1946, pp. 581-5).
- KEITH, J. D. and PEQUEGNAT, L. A. "Some observations on the prevalence of rheumatic heart disease in Canada" (*Canadian Journal of Public Health*, vol. 38, March, 1947, pp. 111-17).
- MORGAN, E. A. and WISHART, D. E. S. "Laryngo-tracheo-bronchitis" (*Canadian Medical Association Journal*, vol. 56, Jan., 1947, pp. 8-15).
- ROSS, J. R. "Delayed absorption of proteins in the guinea pig" (*Journal of Allergy*, vol. 18, March, 1947, pp. 86-9).
- SILVERTHORNE, N. "Tetanus" (*Journal of Pediatrics*, vol. 30, Feb., 1947, pp. 195-8).
- SNELLING, C. E. "The Rh factor in erythroblastosis" (*Canadian Medical Association Journal*, vol. 56, Jan., 1947, pp. 47-51).

## Pathological Chemistry

*Under the direction of Professor A. Hunter*

Last year I reported with regret the resignation of Dr. H. Boddington. This year, I am sorry to say, will be the last in which the Department of Pathological Chemistry will enjoy the services of two other senior members of the staff, Dr. R. W. I. Urquhart and Dr. D. L. Selby. Dr. Urquhart has held appointments in the Department for twenty-two years, Dr. Selby for eighteen. Each has been promoted ultimately to the rank of Lecturer, and each, while exerting a sound influence upon the teaching of the Department, has made substantial contributions to its research work. In their combination of clinical experience and fundamental scientific knowledge they will be hard to replace. It is therefore unfortunate that the pressure of other duties has now compelled them to resign their University appointments.

The place of Dr. Boddington as Demonstrator in charge of laboratory work at St. Michael's Hospital has been taken by M. O. O'Sullivan. As biochemist to the Hospital, Mr. O'Sullivan brings to his departmental duties a fund of very valuable practical experience.

Other newcomers to the staff have been Dr. C. P. Rance as Assistant and Dr. H. R. Gallie as Fellow. These gentlemen are recent medical graduates who desired to acquire some knowledge of basic science before entering, the one as a paediatrician, the other as a surgeon, upon a specialized clinical career. Besides acting as laboratory instructors they have taken an active part in the research work of the Department. Departmental research has benefited also by the presence of Dr. C. J. Bardawill, holder of a medical research fellowship from the National Research Council. It augurs well for the future that graduates in medicine have begun again to take advantage of the opportunities which this Department affords, for training in fundamentals.

The laboratory courses for medical students have been subjected this year to considerable revision. Some obsolescent methods have been dropped, and quite a number of recently developed but already widely practiced methods have been added. Where these were too elaborate to be practised by the individual student, they have been taught by demonstration, with students acting as voluntary subjects. In this way it has been possible to give in the allotted time a more complete course in diagnostic methods than has been hitherto attempted. In correspondence with the changes made there has been prepared an entirely new edition of the "Laboratory Directions in Pathological Chemistry."

Medical students enrolled in the Department numbered 279, of whom 152 were in their second year and 127 in their third. There were two graduate students registered, one of them a candidate for the M.A. degree, the other taking Pathological Chemistry as a minor toward the Ph.D. degree.

The Department has continued to perform basal metabolic rate determinations for certain services of the Toronto General Hospital. The total number of such



determinations was 194. The number of patients involved was 138, of whom 105 were surgical and 33 obstetrical or gynaecological cases.

Finally it should be mentioned that proposals have been put forward and estimates of cost have been obtained for the establishment within the Department of a special laboratory for clinical investigation. The purpose in view is the promotion of clinical research by direct and intimate collaboration between this Department and the clinical departments. It is hoped that these proposals will bear fruit in the near future.

The following is a brief statement of the research work which has been in progress during the year:

#### RESEARCH

- GALLIE, H. R. Influence of phosphatase and aqueous bone extract on healing of fractures.  
 GORNALL, A. G. Treatment of uremia by intestinal perfusion (in association with the Department of Pharmacology).  
 GORNALL, A. G. and BARDAWILL, C. J. Study of methods for the assessment of liver function. Biochemical disturbances following experimentally produced hepatic damage in dogs. Investigation of methods for the fractionation and determination of plasma proteins.  
 HUNTER, A. and DOWNS, C. E. Continuation of studies upon the behaviour of the enzyme arginase.  
 NICHOLSON, T. F. The site of ammonia formation in the kidney.  
 NICHOLSON, T. F. and RANCE, C. P. The establishment of methods to produce a controlled degree of damage in selected portions of the tubule in one kidney. A comparison of the diacetyl monoxime method for urea determination with the standard urease methods. Observations on the stimulus to ammonia formation by the kidney.  
 ZIEGLER, J. A. Preparation of various derivatives of riboflavin.

### *Pathology and Bacteriology*

*Under the direction of Professor William Boyd*

In last year's report reference was made to the effect of the voluntary reduction of the laboratory time devoted to Special Pathology by eighty hours. The favourable impression gained at that time has been since confirmed, and there can be no question that the knowledge and understanding of pathology by the students have in no way suffered.

As the museum is being used more and more by graduate students, material is being introduced illustrating clinical subjects, such as the distribution and spread of thoracic and abdominal pain. The museum is now equipped with a set of microscopic sections illustrating all the principal pathological conditions. This set has been extensively used by graduate students and by a number of clinical interns. J. Frank Payne, in charge of the technical work of the museum, has been absent on leave for over a year on account of illness, from which he has now fully recovered. During his absence his duties have been assumed by Miss V. L. McKinnon in addition to her own, a task which has thrown a very heavy burden on her shoulders. Without her assistance it would have been impossible to carry on the work of the museum. Experiments are being conducted with regard to improved methods of lighting the museum.

In addition to the clinical-pathological conferences which have been conducted for ten years with the Department of Medicine and more recently with the Department of Surgery, similar occasional conferences have been instituted this year with the Department of Obstetrics and Gynaecology. These various conferences afford members of the clinical and laboratory staffs the opportunity to be brought in contact with recent advances in allied subjects, and serve to elucidate perplexing problems.

In addition to the usual teaching fellows and interns the following have worked in the Department in a voluntary capacity for six-month periods: Dr. W. A. Rowland, Dr. D. J. MacKenzie, Dr. B. M. Wilson, Dr. M. L. Allan, and Dr. E. C.



Evans. The following visitors have used the facilities of the Department over a period of months: Dr. P. Raghaven, S.G.S. Medical College, Bombay, India; Dr. Robert B. McClure of Honan, China; Dr. F. T. Mao, National North Western University of China, Sian, Shensi, China; and Dr. T. Beath of Columbia, South Carolina.

In September Dr. George Shanks retired from his position of Pathologist at the Toronto Western Hospital, relinquishing his University position of Assistant Professor of Pathology. Similarly, at the end of June Dr. I. H. Erb is retiring from his position of Pathologist at the Hospital for Sick Children and will relinquish his University post.

#### RESEARCH

The following studies are in progress or have been completed: Dr. J. E. Kurtz on lipoid pneumonia; Dr. E. A. Gagnon on mutiple malignancy; Dr. C. Slade on idiopathic recurrent thrombophlebitis; Dr. J. W. Adams on bronchial adenomas; Dr. H. J. M. Barnett on ruptured mesenteric aneurysm; Dr. C. C. Gray on metastatic calcification of the lung; Dr. D. J. MacKenzie on the entry of air into veins in asthma; Dr. G. E. Wodehouse on the production of malignant hypertension by radiation of the kidneys; Dr. M. A. Ogryzlo of the Department of Medicine has been studying the skeletal muscle tissues occurring in rheumatoid arthritis.

The files of the division of Surgical Pathology have been extensively used for study and research, not only by the staff of the Department but also by visiting physicians particularly Dr. T. Beath and Dr. R. B. McClure.

In the division of Bacteriology a study has been continued on the sensitivity to penicillin of gonococci isolated from patients. This study has been in progress for over two years, and acquired drug resistance to penicillin has not yet been encountered in any of the gonococcal strains tested. Various commercial products reputed to prolong the blood concentration of penicillin following intramuscular administration have been tested on patients in collaboration with the Department of Medicine. Mixtures containing peanut oil and beeswax have proven most effective while some emulsion-forming preparations have failed to prolong the blood concentration beyond that obtained with simple aqueous solutions.

In conjunction with the Departments of Obstetrics and Gynaecology and Paediatrics an investigation on the Rh blood factor was commenced. At first the study was restricted to the public ward patients attending the prenatal clinics of the teaching hospitals. The survey was later extended to all hospitals in Toronto with adequate laboratory facilities, and Rh tests have now become a part of the prenatal care of private obstetrical patients. Approximately 1 per cent of obstetrical patients have been found to have Rh antibodies in their blood. Dr. G. Smith has investigated the value of antihuman rabbit sera in connection with the detection of Rh antibodies.

Dr. R. M. Price has continued a study of the bacteriology of selected cases of extrapulmonary tuberculosis and tuberculous meningitis in children. For about three years no new cases of bovine tuberculosis have been encountered, indicating that the compulsory pasteurization of milk throughout the Province has quite effectively controlled the occurrence of this type of tuberculous infection in children. Her interest in BCG as a prophylactic measure against tuberculosis has been maintained. This year a group of thirty-four volunteers made up of medical students, interns and a few children were vaccinated. Interesting information was brought to light, not the least of which is that it is possible to sensitize an individual to tuberculin in fourteen days by giving BCG intracutaneously. The sub-surface methods for growing tubercle bacilli are being studied and have been utilized in connection with an investigation on the use of streptomycin in the treatment of tuberculosis, especially tuberculous meningitis in children. In some instances it has



been demonstrated that the infecting organism has acquired marked resistance to streptomycin during therapy.

Dr. R. C. Smith of the Department of Medicine has worked on the use of differential media for the cultivation of pathogenic fungi. Media containing penicillin and streptomycin have been found to suppress contaminating bacteria and to aid the isolation of fungi from skin lesions. He has also investigated the incidence of *Monilia albicans* in the sputum of patients with pulmonary infections as compared with a control group. Dr. G. Hawks has studied the bacterial flora of the air in operating rooms in relation to air filtering and air conditioning systems.

In the division of Neuropathology Dr. E. A. Linell has reported a series of cases of presenile dementia, Dr. A. S. Douglas has completed an investigation of the cerebral changes in anoxia, and Dr. J. C. Richardson has investigated an important group of cases of acute peripheral neuropathy. There has been a marked increase in the amount of material received from the surgical and autopsy services. Postgraduate instruction has also increased in amount and scope to include physicians, surgeons, psychiatrists, and ophthalmologists.

#### PUBLICATIONS

- BOYD, WILLIAM. "Recent advances in cancer research with special reference to cancer of the mouth" (*Journal of the Canadian Dental Association*, vol. 12, 1946, pp. 539-42).  
 ——— *Surgical pathology* (sixth edition). Philadelphia: W. B. Saunders Co. 1947.  
 GREEY, P. H. "The clinical importance of antigenic differences in human blood" (*Canadian Medical Association Journal*, vol. 55, 1946, pp. 57-65).  
 IKEJIANI, O. "The antigenic composition and the effect of various extracts of *Trypanosoma equiperdum* and *Trypanosoma lewisi* on the leucocyte picture in experimental trypanosomiasis" (*American Journal of Hygiene*, vol. 45, 1947, pp. 144-9).  
 IKEJIANI, O. and MAUTNER, L. S. "Changes in the leucocyte picture in experimental trypanosomiasis by administration of neostibosan and neostam" (*Journal of Experimental Therapeutics*, vol. 87, 1946, pp. 343-9).  
 KURTZ, J. E. "Role of pathology in cancer control" (*Canadian Nurse*, vol. 43, 1947, pp. 437-9).  
 MACDONALD, I. B. "Tuberculosis of Meckel's diverticulum" (*British Journal of Surgery*, vol. 34, 1947, pp. 324-5).  
 MACMILLAN, R. L. "Adrenal apoplexy associated with hypertension" (*Lancet*, vol. 1, 1947, pp. 177-8).  
 TAYLOR, C. W. "The management of psychoneurosis" (*University of Toronto Medical Journal*, vol. 24, 1946, pp. 23-8).

#### Pharmacy and Pharmacology

*Under the direction of Professor J. K. W. Ferguson*

A welcome addition to the Department during the past year was Dr. E. A. Sellers, who was appointed Assistant Professor in September, 1946. Dr. Sellers graduated Gold Medallist in Medicine from the University of Manitoba in 1939. After internship he joined the R.C.N.V.R. Following tours of sea duty and general duty he was attached to the Naval Medical Research Division until 1946. His researches there resulted in the publication of several highly creditable papers.

Courses were given during the session to the third medical year, the second dental year, and a seminar course to a small group of graduate dentists. The short course on Bio-assays was given twice to the two second-year classes of the Ontario College of Pharmacy. The graduate course in General Pharmacology was given for the second time. Drs. Sellers and Ferguson gave lectures in the postgraduate series organized by the Department of Physiology.

In February, 1947, the Council of the Faculty of Medicine made an important decision when they approved the discontinuation of the teaching of prescription writing in Latin. Breaking as it did with a long tradition, the decision was hard to make, but necessary, since the consistent use of Latin in prescribing has become well-nigh impossible in recent years. The Faculty Council also approved continu-



ation of the campaign, now in its fifth year, to convert from the use of apothecary and avoirdupois weights and measures to the use of the metric system in the prescribing of medicines.

#### RESEARCH

Dr. Ferguson and Dr. Sellers have continued an investigation begun last year which aims to test the effect of various substances on goitre produced by thiouracil. Interesting and possibly useful findings are beginning to accumulate in a satisfactory manner. For a few months S. C. Wang, a chemist from China, assisted with this work.

Dr. J. W. Rogers and Dr. Sellers have developed what promises to be an excellent method of relieving the toxæmia of anuria, in the form of a new method of irrigating the bowel. Interest in this problem was aroused by the work of Kolff in Holland and of Dr. Murray of Toronto, on artificial kidneys, and was actually instigated in this Department by Dr. John Mann of the Department of Obstetrics and Gynaecology, but the idea of a novel method of intestinal irrigation was due to Dr. Rogers.

Dr. Rogers has also been working on the pharmacology of uterine muscle and has been making satisfactory progress.

W. Paul has continued his studies of pulmonary function by means of the Millikan photoelectric oximeter. He has developed a quantitative theory of regional inhomogeneity in the lung. He has also assisted in collaborative studies with the Departments of Surgery and of Anaesthesia on the incidence of anoxia in surgical operations, particularly on the chest.

Dr. D. M. Bean has assisted in the studies on anoxia, in surgery, and has also made a comparative study of neostigmine and physostigmine in humans as regards the incidence of undesirable side effects when they are given. He has also written a very creditable review of local anaesthetic drugs.

Dr. D. E. Hutcheon, under the direction of Dr. Lucas, has studied the cause of sudden cardiac death under chloroform and cyclopropane anaesthesia. It is much less easily produced under the latter and apparently by a different mechanism.

L. A. O. Roadhouse has studied the toxicity of various insecticides to mammals, a subject of considerable economic importance.

H. W. Smith has continued his studies on the measurement of alcohol in the blood and urine, and the sources of error in various methods. He has also completed a study of the anaesthetic properties of isomers of glycerol-guaiacol ethers.

Dr. Shirley Fleming, directed by Dr. Lucas, has studied procaine as an intravenous anaesthetic, a most unexpected but apparently promising use for a local anaesthetic.

Dr. G. H. W. Lucas has continued his studies directed towards the identification of minute amounts of strychnine in human liver and is making satisfactory progress. He has received valuable help in doing bioassays on the strychnine from Dr. D. M. Young of the Connaught Laboratories. Dr. Young has also been most helpful in directing the studies of Dr. H. G. Skinner, who, though nominally attached to this Department has, in fact, been working under Dr. Young on the action of extracts of spleen on the blood platelets.

Research in this Department has been assisted by grants from the Banting Research Foundation, the National Research Council, the University Research Fund, the Life Insurance Medical Research Fund and Hoffmann LaRoche Limited.

#### PUBLICATIONS

FERGUSON, J. K. W. "The effectiveness of certain systems of oxygen supply" (*Journal of Aviation Medicine*, vol. 17, 1946, pp. 486-9).

———"The pharmacology of digitalis" (*University of Toronto Medical Journal*, vol. 24, 1946, pp. 47-52).



LUCAS, G. H. W. "The relationship between the toxicity, potency, acquired sensitivity and the chemical structure of some local anaesthetics" (*University of Toronto Medical Journal*, vol. 23, 1946, pp. 195-8).

SELLERS, E. A. "Significance of the liver in protein metabolism" (*University of Toronto Medical Journal*, vol. 24, 1946, pp. 81-8).

## Physiology

*Under the direction of Dr. C. H. Best*

The Department has had a very busy and profitable year. Undergraduate instruction has been given to a total of 977 students; 398 hours of lectures and 500 hours of laboratory teaching were provided for these undergraduates. The number of postgraduate students registered was 35, of which 9 were registered for the major subject of their Ph.D., 8 for the minor for the Ph.D., 5 for the M.A. degree, 2 for the B.Sc. (Med.) degree. The remainder were not proceeding immediately to a postgraduate degree. Postgraduate lecture series were given to the housemen of the teaching hospitals in Toronto (40 hours) and shorter courses to medical graduates taking a summer refresher course, and to graduate students in the Departments of Oto-Laryngology and Ophthalmology and the Faculty of Dentistry. The entire practical course in Physiology and the manual which describes this type of instruction, were revised. The advanced courses in Biophysics were brought up to date. The three text-books published by members of the staff of the Department, which continue to enjoy great popularity, were revised largely through the efforts of Dr. N. B. Taylor. The meetings of the Physiological Society continued to attract large audiences from many departments of the University. The guest lecturers included Dr. Rocha e Silva, Instituto-Biologico, Sao Paulo, Brazil, who is an authority on blood clotting; Sir Henry Dale, Past President of the Royal Society of London, Past Director of the National Institute for Medical Research, and international authority on the chemical transmission of nerve impulses; Dr. J. Talesnik from the University of Chile, who spoke on thyroid hormones; Dr. B. C. P. Jansen, Professor of Biochemistry in the University of Amsterdam, who was the first scientist to prepare a crystalline vitamin; Dr. L. C. Simard, University of Montreal, who spoke on the "Neuro-insular complex of the pancreas"; Dr. T. Jukes, a graduate of the University of Toronto and now with the Lederle Laboratories, who spoke on "Folic acid"; Dr. R. A. Peters, senior member of the group from Oxford University who discovered British anti-Lewisite. This substance now has great peace-time applications. Dr. G. C. Butler, a graduate of this University and now biochemist at Chalk River, spoke on "The isotopes in medical research"; Dr. W. J. Kolff, of Kampen, Holland, reviewed his work on the artificial kidney; Dr. J. Beattie, Director of Research, Royal College of Surgeons in England, discussed his post-war researches in occupied Europe; Dr. Bouwdijk Bastiaanse spoke on "The kidneys in pregnancy" and described his work carried out in the Department of Obstetrics in the University of Amsterdam; Dr. H. P. Himsworth, of University College Hospital, London, spoke on "The intra-hepatic circulation." Dr. James Campbell acted as secretary of the Physiological Society.

Professor D. Y. Solandt received the Medal of Freedom (Bronze Palm) from the United States government. The Head of the Department was made a Doctor of Science (*honoris causa*), University of Cambridge, a Doctor of Medicine (*honoris causa*), University of Amsterdam, and a Fellow of the Royal Academy of Sciences, Amsterdam. Dr. Solandt has acted as Consultant in Industrial Hygiene to the provincial and Dominion governments. The Head of the Department has served on an advisory committee to the Medical Research Division of the National Research Council of Canada and as Consultant to the United States Public Health Service, as a Scientific Director of the International Health Division of the Rockefeller Foundation, and as one of the two Canadian medical representatives attending the



Commonwealth Scientific Conference convened last summer in England by the Royal Society of London and the governments of the Commonwealth. He has given twelve lectures during the academic year in other universities of Canada and in the United States.

### RESEARCH

The Head of the Department and Dr. Solandt have been retained on the active list of the Royal Canadian Navy as Consultants in Medical Research. A small amount of time is devoted by the section of Biophysics to naval problems. Dr. D. B. Moran and Dr. E. L. Crumpacker, the latter from the University of Virginia, have made considerable progress in their study with Dr. Solandt on the genesis of the electrocardiogram. M. L. Bunker has continued his studies on the effects of exposure at low temperature and a modification of these effects by diet. Dr. J. W. Scott has completed his study of peripheral visual acuity. Dr. J. R. Gaby, a postgraduate student in Ophthalmology, has investigated the anomalous perception of yellow light experienced when mixtures of pure red and pure green provide the visual stimuli. He also studied the structure of the optic nerve fibres as a preliminary to observation of the changes which accompany atrophy of the optic nerve.

Dr. R. E. Haist, in collaboration with Dr. M. A. Ashworth, Mrs. E. J. Pugh and Dr. J. B. Firstbrook, has studied a series of problems in carbohydrate metabolism. The work with Mrs. Pugh marked the beginning of a comprehensive investigation of the volume of the islets of Langerhans under various conditions. Dr. Ashworth, with the assistance of B. Kinash, has made a number of contributions to the knowledge of blood-flow to the liver and its relationship to carbohydrate changes. Dr. Firstbrook has continued certain investigations on shock in which Dr. Haist had previously been interested.

Dr. E. T. Waters has collaborated with Dr. E. Fidler in further experiments on the liberation of histamine and heparin from the isolated liver. With E. S. Goranson investigations on the development of a sensitive test for very small amounts of insulin have been pursued. Dr. Waters and G. Balasubramanyam, who arrived in the Department in January from the Indian Institute of Science, Bangalore, India, have been investigating the substance of pancreas which may antagonize the effects of insulin.

Dr. J. Markowitz and Dr. E. A. Ryan have made good progress, using surgical techniques, in their studies of liver function.

Dr. J. Campbell and D. W. Snair, the latter from Acadia University, have continued investigations which were being actively pursued in 1939, on the diabetogenic substances of the anterior pituitary gland.

In the teaching activities of the Department, a great deal of help has been received from the staff of the Banting and Best Department of Medical Research.

### PUBLICATIONS

- CAMPBELL, J. "The effects of insulin on the increase in liver fat produced by anterior pituitary extracts" (*American Journal of Physiology*, vol. 147, 1946, pp. 472-7).
- HAIST, R. E. "Carbohydrate metabolism in traumatic shock" (*American Journal of Digestive Diseases*, vol. 13, 1946, pp. 152-5).
- JAQUES, L. B., FIDLAR, E., FELSTED, E. T. and MACDONALD, A. G. "Silicones and blood coagulation" (*Canadian Medical Association Journal*, vol. 55, 1946, pp. 26-31).
- MARKOWITZ, J. "The R.A.M.C. in Thailand P.O.W. camps" (*Journal of the Royal Army Medical Corps*, vol. 86, 1946, pp. 139-59).
- ROCHA E SILVA, M., SCROGGIE, A. E., FIDLAR, E. and JAQUES, L. B. "Liberation of histamine and heparin by peptone from the isolated dog's liver" (*Proceedings of the Society for Experimental Biology and Medicine*, vol. 64, 1947, pp. 141-6).
- WATERS, E. T., MARKOWITZ, J. and JAQUES, L. B. "Anaphylactic shock in dogs with Eck fistula" (*American Journal of Physiology*, vol. 146, 1946, pp. 487-9).



## Psychiatry

*Under the direction of Professor C. B. Farrar*

*Required courses.* For the first time three introductory lectures were given early in the first medical year, outlining in brief personality development, physiological and psychological relationships and social factors in mental health. It was possible to extend somewhat instruction in the second and third years as each of these courses covered two quarter-terms in place of the previous trimester. The new plan of breaking up the fourth-year section into small groups, under individual instructors, for case studies, has proved advantageous and affords the students a better acquaintance with community psychiatry and the psychiatric problems of general practice. The total number of hours allotted for psychiatric instruction throughout the four years is now seventy.

*Diploma course.* The following physicians have been enrolled for the twelve-months diploma course during the year 1946-7: Dr. J. D. Atcheson, Dr. G. W. Cantelon, Dr. J. O'Neill, Dr. E. J. Rosen and Dr. W. B. Spaulding. Of these Dr. Atcheson, Dr. Rosen and Dr. Cantelon were detailed from the provincial mental hospital service and Dr. Spaulding and Dr. O'Neill registered under the provisions of the Department of Veterans Affairs. The total number of men who previously graduated in this course is 51. Members of staff have given lectures and demonstrations in courses in the Department of Hygiene and Preventive Medicine, the School of nursing, Occupational Therapy and the School of Social Work.

*Staff changes.* Dr. E. P. Lewis who for many years had been director of the out-patient department of the Psychiatric Hospital and Assistant Professor of Psychiatry, resigned as of August 1, 1946, to become Director of the Mental Hygiene Division of the Department of Health, city of Toronto, and has been named Special Lecturer in Psychiatry. Dr. Mary V. Jackson and Dr. John G. Dewan have been promoted to the rank of Assistant Professor. Dr. K. G. Gray, having returned to Toronto to take a post in the office of the Premier, has been re-appointed to the staff as Special Lecturer in Forensic Psychiatry. Dr. G. H. Lugsdin, returning from leave of absence for military service, has been re-appointed to staff as Demonstrator in Psychiatry. Dr. D. G. McKerracher severed his connection November 1, 1946, and was appointed Commissioner of Mental Services, Province of Saskatchewan.

## RESEARCH

A study was made of patients showing a specific alpha variant in the electroencephalogram by Dr. Proctor of our staff and Mr. John Goodwin of the Department of Medical Research, in conjunction with the Department of Medicine of the Toronto Western Hospital.

A clinical syndrome was found to be related to these electroencephalographic abnormalities. The effect of various medications was noted and a report is to be given in the form of two separate presentations at the American Psychiatric Association meeting in New York in May of this year under the following titles: "The effect of various medications on patients showing psychomotor variants in the electroencephalogram"; "The clinical significance of psychomotor variants in the electroencephalogram in psychoneuroses and epilepsy."

## PUBLICATIONS

- FARRAR, C. B. "Psychiatry"; in *New international year book*, 1947. New York: Funk and Wagnalls. 1947.
- PROCTOR, L. D. and MACKENZIE, K. G. "Bilateral frontal lobe leucotomy in the treatment of mental disease" (*Canadian Medical Association Journal*, vol. 55, 1946, pp. 433-41).



## *Surgery*

*Under the direction of Professor W. E. Gallie*

This year has seen a return to the general routine of the pre-war years. Reference was made last year to the fact that the staffs were somewhat depleted owing to the gap of six years caused by the war. Nevertheless this shortage of staff gave greater opportunity to the increased number of senior interns and consequently worked out very well.

Towards the end of the session, Dr. F. P. Dewar returned from New York where he had spent a year as a Fellow at the Hospital for Ruptured and Crippled, and joined Dr. R. I. Harris in the orthopaedic service at the General Hospital. His return has added greatly to the strength of the service.

Dr. E. B. Tovee completed his year in research and clinical study with Dr. L. R. Dragstedt at the University of Chicago and has now joined Dr. R. R. Graham's service at the General Hospital. He brings to it an intimate knowledge of the new physiology of the stomach and an enthusiasm for further scientific research.

Dr. W. G. Bigelow spent most of the year on a fellowship which carried him to the vascular clinics at San Francisco, Nashville, New Orleans, Atlanta, New York and Baltimore. At Johns Hopkins he worked for some months in the laboratories of Professor Blalock on congenital heart disease. This study of basic physiological problems will be of great value in the development of this branch of surgery at the General Hospital. Dr. Dewar, Dr. Tovee and Dr. Bigelow are full-time Fellows in Surgery.

Dr. W. T. Mustard has returned to the Hospital for Sick Children after a year as Fellow at the New York Orthopaedic Hospital. He also spent some time with Dr. Blalock at Baltimore and has now started a vascular clinic at the Children's Hospital. He has been appointed Junior Demonstrator of Surgery.

Dr. H. V. Slemon, Dr. C. M. Spooner and Dr. Lyman Barclay have received appointments as Junior Surgeons at the Toronto Western Hospital and have been appointed also as Junior Demonstrators of Surgery in the University. Dr. Slemon is associated with Dr. Laird in general surgery, Dr. Spooner with Dr. Roome in urology and Dr. Barclay will develop plastic surgery.

During this year the following members of the Department of Surgery have received appointments as Surgeon-in-Chief in important Toronto hospitals:

Dr. W. Keith Welsh as Surgeon-in-Chief at St. Michael's Hospital with the University rank of Assistant Professor; Dr. J. R. F. Mills as Surgeon-in-Chief at the Wellesley Hospital; Dr. Burns Plewes as Surgeon-in-Chief at the Toronto East General Hospital; Dr. Jessie Gray as Surgeon-in-Chief at the Women's College Hospital. Dr. J. L. McDonald leaves the staff of the Hospital for Sick Children to become Chief of Staff at the Wellesley Hospital.

I regret to record the retirement this year of Dr. G. E. Wilson and Dr. T. A. Robinson from the staff of St. Michael's Hospital and from the University. Dr. Wilson has been a member of the Department of Surgery since 1909 and Surgeon-in-Chief at St. Michael's Hospital for over twenty years. It is pleasant to record that after two very serious illnesses he has risen again and is stepping from his university work into private practice with enthusiasm. Dr. Robinson also has given long and faithful service to his hospital and the University and he takes with him the goodwill of all his colleagues.

Dr. Warren Stoddart has this year retired from his war-time appointment in the orthopaedic service at the General Hospital and from the University. The assistance he gave while the staff was depleted of younger men during the war was invaluable. He continues in the out-patient service at the hospital.

The reorganization of the staffs and services of the Wellesley and the Toronto East General and the appointment of chief surgeons who have been trained in the resident system is of great importance to the University because, while these hospitals



are not used in undergraduate teaching, they will provide excellent facilities for the training of more surgeons and the preparation of candidates for Fellowship in one of the Royal Colleges and for the degree of Master of Surgery.

During the year the programme of postgraduate instruction for surgical interns in the four University hospitals who are candidates for the degree of Master of Surgery, was continued. The Department of Anatomy gave two evenings a week and showed that in two years it was possible to make a very complete review of human anatomy. The Department of Physiology gave a series of lectures on two afternoons a week in which the newer physiology as applied to medicine was discussed. And in the Department of Surgery itself, a series of clinical discussion groups were conducted in the evenings in which all new work in surgery was reviewed. This course of postgraduate instruction is of the utmost value to these young men, both from the standpoint of their scientific education and from that of the examinations for higher degrees and diplomas with which they will be confronted.

In the autumn the department gave a two months' refresher course to 26 students designed to prepare them for the examination for the Fellowship.

Special reference should be made to the appointment of Professor W. Keith Welsh as Surgeon-in-Chief at St. Michael's Hospital. His skill as a surgeon and as a teacher is well known and his ability as an organizer and director of a large service has been demonstrated in the Navy. His appointment will prove of great value both to the hospital and to the University.

Among the honours conferred this year upon members of the staff, particular reference should be made to the appointment of Dr. H. W. Wookey as Hunterian Professor in the Royal College of Surgeons. He will deliver his lecture in London in September on "The surgical treatment of carcinoma of the oesophagus." Dr. R. I. Harris is this year president of the American Orthopaedic Association. The Head of the Department was elected First Vice-President of the American Surgical Association. He has also been selected as Past President of the American College of Surgeons to go to England in September to assist in the presentation of a lectern and desk and a gift of ten thousand pounds to assist the Royal College of Surgeons to rehabilitate itself from the effect of German bombs. He will deliver a Moynihan Lecture at the College.

The appointment of Dr. R. M. Janes as Professor of Surgery and Surgeon-in-Chief of the General Hospital gives the retiring Professor the utmost satisfaction. The Faculty and the Alumni may rest assured that the Department will progress under his direction.

### RESEARCH

- BIGELOW, W. G. Preliminary experiments dealing with blood volume changes in burns. Carrying-out of clinical investigation on chronic ulcers of the leg.
- BOTTERELL, E. H., JOUSSE, A. T., ABERHART, C. and CLUFF, J. W. Clinical study of the treatment of the neurogenic bladder.
- DEWAR, F. P. Completed end result study of the conservative treatment of scoliosis under the direction of Dr. P. D. Wilson and Dr. J. Cobb in New York.
- FARMER, A. W. Tendon sheath reconstruction—with Drs. Caudwell and Franks. Local application for burns—with Drs. Clute and Franks.
- GORDON, S. D. Researches on the fate of transplanted cancellous bone (with Dr. A. Ham)—completed. Researches on the fate of buried transplanted skin and on strips of dermis used as suture to sew incisions in muscle and fascia. Circulation in free skin grafts using fluorescein for detection.
- HARRIS, R. I. Principles involved in construction of an efficient tourniquet.
- JANES, R. M., KERGIN, F. G. in association with Professor Ferguson of the Department of Pharmacology, Dr. W. E. Brown of the Department of Therapeutics, Dr. D. M. Bean and W. Paul. Investigation of anoxia during and after thoracic operations.
- KERGIN, F. G. Review of all cases of bronchiectasis treated in the Toronto General Hospital by surgical procedures from 1929 until the present date, with a special study of cases of bilateral bronchiectasis.
- MUSTARD, W. T. Conducting of animal experiments on the operative surgery of the heart.



- ROOME, N. W. Design of a new apparatus for supply of suitable radio frequency currents for electrosurgery.
- ROOME, N. W. with FRANCIS, R. R. Research on effects of parasympatheticomimetic drugs on the human bladder; also effects of other drugs by the same method.
- TOVEE, E. B. Pathogenesis of peptic ulcer; research in hipocaic and metabolism of pancreas—with Dr. Dragstedt, University of Chicago.

## PUBLICATIONS

- BOTTERELL, E. H., JOUSSE, A. T., ABERHART, CARL and CLUFF, J. W. "Paraplegia following war" (*Canadian Medical Association Journal*, vol. 55, Sept., 1946, pp. 249-59; also published in *Cincinnati Journal of Medicine*, vol. 27, 1946, pp. 595-623).
- DELARUE, N. C. "The sequelae of closed head injuries—evaluation, treatment and prognostic considerations" (*Nova Scotia Medical Bulletin*, Feb., 1947, vol. 26, no. 2, pp. 25-38).
- GALLIE, W. E. "Ideals in surgery" (*Surgery, Gynecology and Obstetrics*, vol. 84, April, 1947, pp. 513-18).
- GORDON, STUART. "The role of cancellous bone in plastic surgery" (*Surgery*, vol. 20, no. 2, Aug., 1946, pp. 202-3).
- GORDON, STUART and WARREN, R. F. "Autogenous diced cartilage to bone" (*Annals of Surgery*, vol. 125, no. 2, Feb., 1947, pp. 237-9).
- GRAHAM, R. R. "Clinic on biliary disease" (*Postgraduate Medicine*, vol. 1, April, 1947, p. 312).
- "The surgeon—an individualist" (*Surgery*, vol. 20, no. 2, Aug., 1946, pp. 163-7).
- "The treatment of acute perforation of duodenal ulcer" (*American Journal of Surgery*, vol. 72, no. 6, Dec., 1946, pp. 802-10).
- HARRIS, R. I. "Fracture of the os calcis" (*Annals of Surgery*, vol. 124, no. 6, Dec., 1946, pp. 1082-1100).
- "Fractures of the os calcis" (*Surgery, Gynecology and Obstetrics*, vol. 84, March, 1947, pp. 374-5).
- Memorandum on low back pain and sciatica*. N.R.C. no. 1303. Ottawa: National Research Council, Section on Orthopaedics, Subcommittee on Surgery, Associate Committee on Medical Research.
- JANES, R. M. "Diverticula of the lower thoracic oesophagus: Report of six, four of which were operated upon" (*Annals of Surgery*, vol. 124, no. 4, pp. 637-52).
- "Lobectomy and pneumonectomy in the treatment of pulmonary tuberculosis" (*Surgery, Gynecology and Obstetrics*, vol. 83, Dec., 1946, p. 815).
- MACDONALD, I. B., MCKENZIE, K. G. and BOTTERELL, E. H. "Anterior rhizotomy" (*Journal of Neurosurgery*, vol. 3, no. 5, Sept., 1946, pp. 421-5).
- MCKENZIE, K. G. and PROCTOR, L. D. "Bilateral frontal lobe leucotomy in the treatment of mental disease" (*Canadian Medical Association Journal*, vol. 55, Nov., 1946, pp. 433-41).
- MURRAY, GORDON. "Anti-coagulants in venous thrombosis and the prevention of pulmonary embolism" (*Surgery, Gynecology and Obstetrics*, vol. 84, April 15, 1947, pp. 665-8).
- "End results of bone-grafting for non-union of the carpal navicular" (*Journal of Bone and Joint Surgery*, vol. 28, no. 4, pp. 749-56).
- MURRAY, GORDON with SIMPSON, J. S. and WATTERS, N. A. "Treatment of extremities following sudden failure of circulation" (*Surgery*, vol. 20, no. 3, Sept., 1946, pp. 315-23).
- MUSTARD, W. T. "The technic of immediate restoration of vascular continuity after arterial wounds" (*Annals of Surgery*, vol. 124, July, 1946, pp. 46-59).
- PLEWES, BURNS. "Bed rest and pulmonary embolism" (*Toronto East Medical Bulletin*, March, 1947).
- SPOONER, C. M. "The treatment of urethritis" (*Canadian Medical Association Journal*, vol. 56, 1947, pp. 193-7).
- THOMSON, STUART. "A splint for treatment of recurrent club-foot" (*Journal of Bone and Joint Surgery*, Oct., 1946, pp. 778-9).
- TOVEE, E. B., DRAGSTEDT, L. R., CLARKE, J. S., PAUL, V., HARPER, EDWARD and WOODWARD, R. "Supra-diaphragmatic section of the vagus nerves of the stomach in gastrojejunal ulcer" (*Journal of Thoracic Surgery*, vol. 16, June, 1947, pp. 226-36).

## Therapeutics

*Under the direction of Professor R. F. Farquharson*

Dr. A. M. Johnson was appointed as Research Fellow in Therapeutics. Drs. C. W. J. Armstrong, J. W. Scott and H. A. Simms were appointed as assistants in Therapeutics.

The general plan of teaching was carried on as in previous years.



In the sub-department of Anaesthesia teaching and investigation of special methods of anaesthesia have been carried on as formerly. Drs. R. A. Gordon and G. D. M. Boddington were appointed as Junior Demonstrators in Anaesthesia.

The sub-department of Physical Therapy has been busy with teaching and routine work.

### RESEARCH

Research has continued to be linked intimately with that in the Department of Medicine. Dr. A. M. Johnson has made a careful investigation into allergic reactions suffered by some patients receiving liver extract. Dr. Squires has continued investigations on the effect of ingestion of thyroid in patients without any lesion of the thyroid gland. Further investigation of various problems in anaemia and endocrinology have been carried on and clinical trials of various newer pharmaceuticals have been undertaken.

### PUBLICATIONS

- FARQUHARSON, R. F. "Clinical evaluation of newer pharmaceuticals" (*Proceedings, 39th Annual Meeting, American Pharmaceutical Manufacturers' Association*, June, 1946).
- FARQUHARSON, R. F., MATHER, J. M. and McCLURE, A. D. "Observations in an outbreak of *Streptococcus haemolyticus* infection at an R.C.A.F. station" (*Canadian Journal of Public Health*, vol. 37, May, 1946, pp. 187-200).
- GORDON, R. A. "Anaesthesia for plastic surgery" (*Canadian Medical Association Journal*, vol. 56, no. 3, March, 1947, p. 277).
- HARGRAVE, R. "Endotracheal anaesthesia in ear, nose and throat surgery" (*Bulletin of the Academy of Medicine*, Toronto, vol. 19, April, 1946, pp. 141-52).
- HEARD, K. M. "Spinal anesthesia in Caesarean section" (*Current Researches in Anesthesia and Analgesia*, Sept., 1946).
- HOPKINS, H. E. and MEREDITH, R. H. "Anaesthesia in upper abdominal surgery" (*Bulletin of the Academy of Medicine*, Toronto, vol. 20, Oct., 1946, pp. 9-10).
- SHIELDS, H. J. "Anaesthesia in thoracic surgery" (*Canadian Medical Association Journal*, March, 1946).

## Banting and Best Department of Medical Research

*Under the direction of Professor C. H. Best*

The present research activities of the Department may be divided into approximately eight groups. One group under the leadership of Professor C. C. Lucas is working on the lipotropic agents, i.e., dietary factors discovered in this University which are essential for the maintenance of the normal functions of the liver and kidneys. In the second group, of which the senior investigator is Dr. G. A. Wrenshall, problems relating to diabetes are studied. Cancer researches, partially under the direction of Professor W. R. Franks and partially under the guidance of Professor Bruno Mendel, constitute the activities of the third group. Many aspects of all the above problems require skilled histological studies, and a laboratory devoted to histopathology under the supervision of Dr. W. S. Hartroft may be considered a fourth section. The enzymes which are responsible for the break-down of the neurohumor, acetylcholine, were first clearly differentiated by Professor Mendel and his collaborators in this Department. Studies of these enzymes, which are being actively continued, comprise the fifth series of researches. The sixth section has to do with work on thrombosis which is being carried forward by Dr. M. F. Clarkson. The seventh group is interested in electroencephalography, and here the senior investigator is J. E. Goodwin. The eighth section is devoted to certain aspects of dental research, and Dr. W. L. Linghorne is the senior investigator.

The Banting and Best Department of Medical Research is, as the title indicates, primarily a research unit, but several members of its staff assist in the teaching of physiology, and one of them is a part-time member of the Department of Pathological Chemistry. While postgraduate students are not registered for degrees



in this Department, sixteen junior members of the staff are registered for degrees, or as postgraduate students not proceeding to a degree, in other departments of the University. Thus one of the main activities of this Department is postgraduate teaching, i.e., instruction of senior students in the methods and problems of medical research.

Studies of the lipotropic factors which prevent degenerative changes in liver and kidneys are being continued by the Director of the Department, Professor Lucas, Dr. Jessie H. Ridout and Dr. Jean M. Patterson. A systematic quantitative reinvestigation has been made of the lipotropic potency of choline, betaine, methionine, inositol and "triethyl-choline" in diets containing varying amounts of fat. The effect of increasing dietary intake of cholesterol upon the deposition of fat in the liver has been determined in diets lacking choline, at two levels of choline and one level of inositol. Lipotropic dose-response curves of choline and inositol were determined in diets containing cholesterol. The same group of investigators have been collaborating with Dr. Wrenshall in a study of the effect of the lipotropic agents upon phospholipid turnover in liver, kidney and nervous tissue. The effect of hypo- and hyperthyroid conditions upon phospholipid turnover has also been studied in collaboration with Dr. J. Talesnik and Dr. Wrenshall. The effect of the protein moiety of the basal diet and of the organic (amino acid) sulphur content of the diet upon growth and lipotropic action has been studied further by Professor Lucas with the help of Miss B. Bragança. Miss O. Josseau and Professor Lucas have undertaken a study of the material thrown down by magnesium chloride from the supernatant obtained when phospholipids are precipitated by acetone from ethereal solution of tissue lipids. Professor Lucas, with the technical assistance of W. J. Watson, has studied methods suitable for the routine extraction of total lipids from tissues. A procedure was evolved which, when applied to liver, kidney, brain and muscle, gave quantitative (better than 99 per cent) extraction within one half-hour as compared with three to six hours by older methods. Products differing markedly from previously described materials have been isolated but it is doubtful whether they have yet been obtained as pure chemical entities. Unexpected difficulties with the inositol assay have hampered fractionation. Miss J. Lang has examined a number of procedures suggested for the micro-biological assay of inositol.

Dr. C. S. McArthur has conducted further experiments with triethyl- $\beta$ -hydroxyethyl ammonium chloride as a tool in the study of the mechanism of action of lipotropic agents. A preparation of pancreatic material soluble in dilute alcohol (lipocaic of Dragstedt) has been prepared. It is being tested for lipotropic activity and analysed for natural substances known to possess lipotropic properties. With Miss M. Murray a reinvestigation of sphingosine has been made. The physiological properties of these substances are being studied.

The work in Professor Franks' section has been largely concerned with re-establishing the cancer research programme interrupted by the war. The studies on the possible immunization against carcinogenesis by the use of chemical protein-carcinogen conjugates as antigens have been renewed. At present the analysis of the immunized animal population which survived into the war years is under way, with the assistance of Miss M. M. Shaw, and in addition certain new experiments with new conjugates have been set up.

A more intimate study of the factors influencing carcinogenesis has been undertaken with particular reference to the physiology of tissue metamorphosis generally. For this work certain insects are being used and we are greatly indebted to the Junior Red Cross Society of Canada for their valuable assistance in collecting some of the material used for this study. The work is being carried out with the co-operation of Dr. J. S. Thompson, Miss R. Gray and B. Brown. The radiological aspects of the study are being carried out with the co-operation of Dr. G. E. Richards of the Department of Radiology. A possible role of acetylcholine in carcinogenesis, following the preliminary report of Hall and Franks, could not



be established in controlled experiments. Advantage has been taken of the same material to test, with the assistance of Dr. G. G. Caudwell, the reported influence of the prolonged exhibition of acetylcholine on cardiac pathology.

In conjunction with Dr. A. W. Farmer and Dr. Caudwell, a more detailed study has been undertaken of the use of various substances and techniques to prevent the adhesion of tendons following injury. This is a further study of work begun by Dr. Farmer before the war.

In the sub-department of Cellular Physiology, Professor Mendel and Miss M. C. Bowman were engaged in determining the effect of various dyes (butter yellow, curcumin, etc.) on the growth rate of transplanted tumours. Professor Mendel and Mrs. R. D. Hawkins have conducted further investigations on the significance of pseudo-cholinesterase in the hydrolysis of acetylcholine *in vivo*. They have found that diisopropyl fluorophosphonate, in certain concentrations, act as a selective inhibitor of pseudo-cholinesterase, and have shown that the degree of inhibition of the activity towards acetylcholine is no criterion for the degree of depression of the activity of true cholinesterase (the enzyme essential for the removal of the acetylcholine liberated at nerve endings) except in cases where (1) pseudo-cholinesterase is absent from the tissue under investigation, or (2) both true cholinesterase and pseudo-cholinesterase are equally sensitive to the anti-cholinesterase employed. Mrs. Hawkins has also conducted studies on the kinetics of the various types of cholinesterases.

Dr. Wrenshall has undertaken the construction of a mass spectrometer which will be capable of measuring carbon, oxygen, nitrogen and hydrogen isotopes. This instrument will greatly facilitate the many medical researches in which the use of isotopes is essential. A number of problems have been studied during the past year, in which radioactive phosphorus has been used as a label. Dr. Wrenshall with Dr. Talesnik completed a very successful study of the rates of turnover of liver lipid phosphorus as influenced by thyroid hormones. Similar studies were made on the effects of choline on the turnover of phosphorus in bone, liver and kidneys. With Dr. Jean Collins-Williams, Dr. Wrenshall has continued his study of alloxan diabetes. They have investigated the effectiveness of certain preparations which claim to be of therapeutic value in diabetes, and they have determined the insulin content of the human pancreas from diabetics and from non-diabetic individuals. Dr. D. Fraser has worked with Dr. Wrenshall and has studied the relative effectiveness of glucose and fructose in maintaining the respiration of smooth muscle. He has also collaborated with Mr. Goranson in studies on the action of insulin on phosphorus compounds and the effect of choline on the uptake of oxygen by muscle. Dr. Collins-Williams has investigated the extraction of insulin from blood.

Work in the section of Histopathology began on October 1, 1946, following Major Hartroft's release from the R.C.A.M.C. An attempt is being made to correlate pathological lesions with biochemical and physiological changes observed during the course of investigations in these latter fields by any members of the Department. Dr. Hartroft has undertaken a detailed investigation of the histological changes in choline-deficient rats. His results indicate that the tubular necrosis, cast formation and haemorrhage occurring in the kidneys of such animals may be the result of mechanical disturbances of the vascular flow secondary to fatty changes in the tubules. Microscopic changes in the arteries and arterioles of survivors of the choline-deficient diet suggest that blood pressure changes may be produced. Dr. A. C. Cody has assisted in the histological study of hepatic changes in choline-deficient rats. E. Klein has carried out lipase demonstrations on histological sections of acholinopathic rats. Assistance has been given to Dr. Franks and to Dr. E. A. Sellers in their investigations of carcinogenesis and of hepatic cirrhosis. Sections to the number of 3,500 stained variously by over twenty different methods, have been prepared during the six-month period.



Mr. Goodwin has been engaged in an electroencephalographic investigation of the epilepsies, including the so-called psychomotor states. A quantitative method was developed for identifying the electrocortical patterns associated with psychomotor conditions. This led to the observation that there was a high incidence of psychomotor-like brain activity, as shown by the electroencephalogram, in certain other clinical conditions, notably psychoneurosis and idiopathic epilepsy. Case history studies on these patients showed a high correlation between the electrocortical activities and a symptom complex in which episodic changes in levels of consciousness and emotional and vasomotor disturbances played a prominent part.

The validity of this correlation is being tested clinically with various chemotherapies, with the collaboration of the Department of Psychiatry, Toronto Psychiatric Hospital, and the Department of Medicine, Toronto Western Hospital. The preliminary results are promising. It is tentatively concluded that psychic equivalents are much more common clinically than has been supposed and that the electroencephalogram may eventually be of definite assistance in the diagnosis of these conditions.

D. C. O'Connell has been engaged in bacteriological studies of certain aspects of periodontal research in co-operation with Dr. H. K. Box and Dr. Linghorne. Coupled with a study of the use of cement packing materials in the treatment of periodontal diseases, an attempt has been made to isolate and cultivate certain fungus-like organisms seen in smears from periodontal pockets, and to study the presence and role of these organisms in periodontal disease.

Dr. Linghorne is carrying on an investigation of diseases of the supporting structures of the teeth. The fundamental properties of therapeutic packing materials which, since the war, are being widely used in the treatment of periodontal disease, have been studied. One of the common results of periodontal disease is the detachment of the gingival tissues from the teeth, causing periodontal pockets. The problem of reattachment of these tissues to the teeth is being studied. Reattachment of the gingival tissues of dogs when detached surgically has been effected. The additional complications that occur when the detachment is the result of disease are being studied. Another common result of periodontal disease is the permanent loss of alveolar bone. This bone has been replaced, after surgical removal in dogs, by the use of living bone chips. Further work on this problem is proceeding. A study is being carried on with animals, to determine the effects of soft diets on the development of the bones of the skull.

The guest workers in the Department continue to provide a cosmopolitan atmosphere. Dr. B. C. P. Jansen, Professor of Biochemistry, University of Amsterdam, Dr. and Mrs. J. Talesnik, University of Santiago, Chile, Miss O. Josseau of the same institution, Miss B. Bragança of the Haffkine Institute, Bombay, India, Dr. and Mrs. Têde Eston de Eston, Sao Paulo, Brazil, have been full-time investigators, and numerous visiting research workers have spent short periods in the Department during the year.

The Department is indebted to the National Research Council of Canada, the Banting Research Foundation, the Nutrition Foundation and the Ontario Cancer Research Foundation, for grants-in-aid.

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- "Factors affecting fat transport in the animal body" (*American Journal of Digestive Diseases*, vol. 13, 1946, pp. 155-8).
- "Greeting from Professor C. H. Best to the diabetics in Denmark"; in *Landsforeningen for Sukkersyge*. Copenhagen. 1946.
- "Physiology and biochemistry"; in *Currents in biochemical research*, ed. by D. E. Green, pp. 427-38. New York: Interscience Publishers. 1946.
- "A quarter of a century in medical research" (*American Journal of Digestive Diseases*, vol. 13, 1946, pp. 148-51).



- BEST, C. H., HOFFMANN, F., LUCAS, C. C. and TALESNIK, J. "Recent work on the lipotropic factors" (*Journal of Physiology*, vol. 105, Sept., 1946).
- HARTROFT, W. S. and BEST, C. H. "Lipoid substance in the cells of proximal convoluted tubules of the kidneys of young rats on a choline-deficient diet" (*Science*, vol. 105, March 21, 1947, p. 315).
- MANNING, G. W. and CAUDWELL, G. G. "Influence of sympathetic blocking agents on incidence of fatal ventricular fibrillation in experimental coronary occlusion" (*Proceedings of the Canadian Physiological Society*, no. 26, 1946).
- MENDEL, B. "The regulation of nerve impulse transmission" (*Nederlandsch Tijdschrift voor Geneeskunde*, vol. 91, 1947, pp. 475-6).
- NOBLE, R. L., SELLERS, E. A. and BEST, C.H. "The treatment of motion sickness" (*Canadian Medical Association Journal*, vol. 56, 1947, pp. 417-24).
- ROGERS, J. W. and GOODWIN, J. E. "Biological testing of intercommunication and radio telephone equipment" (*Proceedings of the Canadian Physiological Society*, no. 14, 1946).
- SELLERS, E. A. and PARKER, J. M. "The effect of closed plaster treatment on the urinary loss of nitrogen after experimental burning" (*Canadian Medical Association Journal*, vol. 55, 1946, pp. 41-3).







